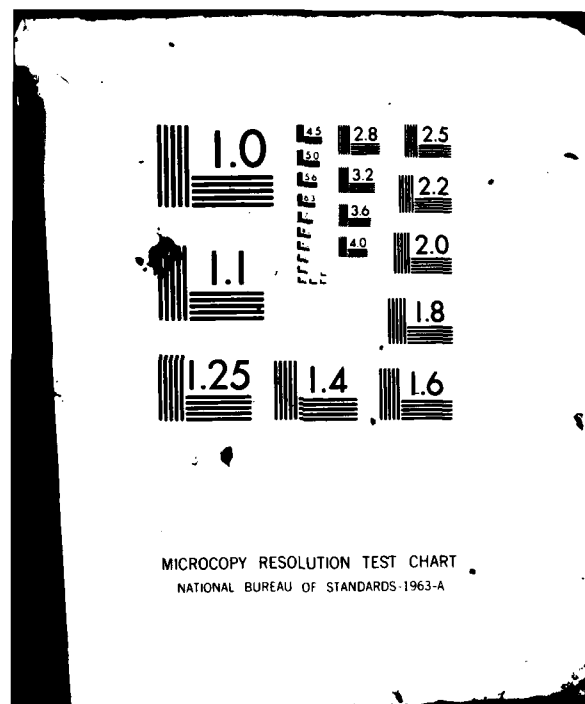


AD-A116 149 AIR FORCE AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATT--ETC F/G 1/2
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 163. GPC-28 C--ETC(U)
MAY 82 T H RAU
UNCLASSIFIED AMRL-TR-75-50-VOL-163

NL

END
DATE
FILMED
7 82
DTIC



AD A116149



SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AMRL-TR-75-50, Vol. 163	2. GOVT ACCESSION NO. AD-A116149	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK: GPC-28 Compressor		5. TYPE OF REPORT & PERIOD COVERED Volume 163 of a series
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Thomas H. Rau, 1/Lt, USAF, BSC		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Air Force Aerospace Medical Research Laboratory Aerospace Medical Division, Air Force Systems Command, Wright-Patterson AFB, OH 45433		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 62202F 72310714
11. CONTROLLING OFFICE NAME AND ADDRESS Same as above		12. REPORT DATE May 1982
		13. NUMBER OF PAGES 53
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Noise Noise Environments Bioenvironmental Noise Ground Support Equipment GPC-28 Compressor		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The GPC-28 is a gasoline engine-driven compressor with a 120 volt 60 Hz generator used for general purpose maintenance. This report provides measured and extrapolated data defining the bioacoustic environments produced by this unit operating outdoors on a concrete apron at a normal rated condition. Near-field data are reported for 37 locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise		

**DTIC
SELECTED
JUN 29 1982
S H**

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 36 locations are normalized to standard meteorological conditions and extrapolated from 10 - 1600 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application," AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

PREFACE

This report was prepared by the Biodynamic Environment Branch, Air Force Aerospace Medical Research Laboratory, under Project/Task 723107, Measurement Prediction of Noise Environments of Air Force Operations.

The author gratefully acknowledges Mr. John N. Cole for his assistance in preparing this report, Mr. Robert G. Powell for his assistance in acquiring the raw data, Mr. Henry T. Mohlman and Mr. Fred Lampley of the University of Dayton for their assistance in the mechanics of data processing and Mrs. Norma Peachey who typed and prepared the graphics.



Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Avail and/or	
Dist	Special
A	

Table of Contents

	<i>Page</i>
INTRODUCTION	3
NEAR-FIELD NOISE	4
FAR-FIELD NOISE	5

List of Tables

NEAR-FIELD NOISE

1. Measurement Location and Test Condition for Operator Noise Measurements	4
2. Measured Sound Pressure Level 1/3 Octave Band	6-8
Octave Band	9-11
3. Measures of Human Noise Exposure	12-14

FAR-FIELD NOISE

4. Measured Sound Pressure Level 1/3 Octave Band	15-16
---	-------

List of Figures

NEAR-FIELD NOISE

1. Measurement Locations	17
--------------------------------	----

FAR-FIELD NOISE

1. Measurement Locations	17
2. Normalized Noise Levels	18-19
3. Overall Sound Pressure Level — Contours	20-21
4. C-Weighted Sound Level — Contours	22-23
5. A-Weighted Sound Level — Contours	24-25
6. Perceived Noise Level — Contours	26-27
7. Speech Interference Level — Contours	28-29
8. Permissible Exposure Time — Contours	30-31
9. Octave Band Sound Pressure Level — Contours	32-49

INTRODUCTION

The GPC-28 is a gasoline engine-driven compressor with 120 volt 60 Hz generator used for general purpose maintenance. This unit is manufactured by T.A. Pelsue Company.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this unit. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with operations of the GPC-28.

This volume is one of a series published by the Air Force Aerospace Medical Research Laboratory (AFAMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type, noise data in the handbook describe the noise produced during ground operations of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Refer to Volume 1 (reference 1) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AFAMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index as it is generated.

Direct any questions concerning the technical data in this report and other handbook volumes to: AFAMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

-
1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application, AMRL-TR-75-50(1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.*

NEAR-FIELD NOISE

MEASUREMENTS

A standard GPC-28 was operated outdoors on a concrete apron at a normal rated condition. Table 1 notes the surface meteorological conditions at the time of measurement.

Figure 1 identifies 72 noise measurement locations at a height of 1.5 meters above the concrete apron (nominal ear level of ground crew). The 0 degree reference direction passes through the tow bar. The 36 locations on the two inner circles are in the acoustic near-field of the source where the sound wave fronts generally do not spherically diverge and the source appears to be spatially distributed (i.e., not a point source). Consequently, these near-field data cannot be extrapolated to longer distances but do properly define the levels at locations close to the unit.

Near-field measurements were also made at ear level at the operator control panel. Table 1 lists the numeric alphabetic designators used on the data pages in this report to identify the operator measurement location and test conditions. The designator 1/A means operator location 1 and test condition A. Such a descriptor is essential in many handbook volumes that involve multiple combinations of location/conditions. It is used in this report to maintain format consistency.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the GPC-28 unit at the 37 specified, near-field locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures in Table 3 which are widely used to assess the effects of noise on personnel and their performance.

For data at other intermediate near-field locations (i.e., for radial distances less than 10 meters) you can interpolate between the 72 measured data points. All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short distances over which the sound is propagated.

TABLE 1
MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR OPERATOR NOISE MEASUREMENTS

GPC-28 Compressor
Tyndall AFB, 19 June 1980
4940-80-XXX-3973, Field # G151

Measurement Location	
1	Operator Control Panel
Operation	
A	Compressor On
Meteorology	
Temperature	29 °C
Bar Pressure	.761 m Hg
Rel Humidity	69 %
Wind - Speed	3.1 m/sec (6 Kts)

FAR-FIELD NOISE

MEASUREMENTS

Noise measurements were also made on the same GPC-28 under the same test conditions at the outer circle locations on Figure 1. These 36 locations are in the acoustic far-field of the source where the sound wave fronts spherically diverge and the unit may be regarded as a point noise source. Under these far-field conditions, the measured data can be extrapolated to longer distances.

RESULTS

Table 4 lists the overall and 1/3 octave band SPL measured at the 36 far-field locations under the meteorological conditions at the time of the test. These data were normalized to 10 meters distance and standard meteorological conditions (15C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 2 which provides a compact summary of the far-field noise characteristics of the GPC-28 in a standard format.

These measured data were also used to derive sets of equal noise contours (Figures 3 through 9) describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. Note that Figure 8 contours identify limiting exposure times for personnel. Missing data points on any of the contours are the result of eliminating measured data which contained excessive influence of spurious background noise present at the time of measurement. In some cases contour levels at these missing data points were estimated and indicated with dashed lines.

TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)														IDENTIFICATION#		
2 1/3 OCTAVE BAND														OMEGA 3.2		
														TEST BA-000-003		
NOISE SOURCE/SUBJECT: (OPERATION#)														RUN 01		
GPC-26 COMPRESSOR (COMPRESSOR ON)														06 APR 82		
NEAR FIELD NOISE LEVELS ()														PAGE F1		
LOCATION/CONDITION																
FREQ	DISTANCE (M)-->	4	4	4	4	4	4	4	4	4	4	4	4	4		
(HZ)	ANGLE (DEG)-->	0	20	40	60	80	100	120	140	160	180	200	220	240		
	CONDITION-->	A	A	A	A	A	A	A	A	A	A	A	A	A		
25																
31.5				74<		74<	75<	75<	76<	76<	76<	74<				
40																
50																
63				72<		72<	72<		72<	72<	72<	72<				
80																
100		73	72<	72		70<	73<	68<	67<	59<	70<	70<	69<	67<		
125		70<	69<	68<		65<	66<				63<	65<	64<	63<		
160		68<	67<	67<		65<	64<	60<	59<	59<	60<					
200		65<	63<	61<		61<	62<	60<	56<	56<	58<	57<				
250		59<				55<	57<	58<	56<	55<						
315		62<	60<	58<		58<	60<	59<	59<	57<	58<	59<	58<	61<		
400		61<	60<	60<		66	66	64	65	63	64	57<	63	65		
500		64	60	63		64	64	61	64	64	62	60	64	65		
630		57	59	61		59	59	58	60	55<	57	53<	53<	52<		
800		52<	55	57		57	57	57	55	53<	53<	55	55	56		
1000		59	60	63		63	61	58	58	56<	57	58	57	56<		
1250		57	58	61		61	62	60	61	57	56	54<	59	57		
1600		54	58	61		61	60	56	59	56	55	53	55	56		
2000		52	55	58		59	59	57	57	55	51	52	51	54		
2500		52	57	58		59	56	57	58	55	52	53	55	55		
3150		53	57	60		59	59	57	59	56	53	53	55	46		
4000		54	57	59		61	60	58	60	56	53	55	56	56		
5000		50	54	57		57	55	55	55	52	48	50	51	51		
6300		46	51	55		56	53	53	54	50	45	47	49	49		
8000		45<	53	57		57	54	55	56	52	47<	48<	50	51		
10000		44<	50	54		53	51	51	53	49	44<	45<	47<	48		
OVERALL		77	76	73		79	79	77	79	78	79	78	73	72		
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

[illegible]

TABLE 1 MEASURED SOUND PRESSURE LEVEL (DB)											
1/3 OCTAVE BAND											
2											
IDENTIFICATION:											
OMEGA 3.2											
TEST RA-000-001											
RUN 03											
05 APR 87											
PAGE 17											
NOISE SOURCE/SUBJECT: (OPERATIONS)											
GPC-28 COMPRESSOR (COMPRESSOR ON)											
NEAR FIELD NOISE LEVELS ()											
()											
()											
LOCATION/CONDITION											
FRFQ	DISTANCE (M)-->	2	2	2	2	2	2	2	2	2	OPERATOR LOCATION
(HZ)	ANGLE (DEG)-->	100	180	200	220	240	260	280	300	320	TEST CONDITION
	CONDITION----	A	A	A	A	A	A	A	A	A	1/A
25											
31.5		78<	79<	75<	77<	76<	76<	76<	76<	77<	80<
40											
50											
63		75<	76<	75<	75<	73<	73<	72<	73<	72<	77<
80											
100		65<	68<	67<	69<	65<	66<	67<	66<	69<	74
125			52<	62<	56<	67<	69<	71<	71<	73	79
160		67<	70	63<	66<	65<	64<	65<	71	74	82
200		65<	60	69	68	69	69	70	70	72	81
250		60<	60<	65	67	69	67	60	70	68	72
315		61<	61<	64	66	67	68	70	70	68	73
400		65	63	64	65	63	64	66	66	64	71
500		67	64	64	62	65	65	66	69	67	70
630		60	60	62	59	62	64	66	62	63	65
800		59	57	58	60	59	62	62	64	60	65
1000		63	62	63	63	63	57	67	65	66	66
1250		62	61	62	63	64	65	66	66	66	65
1600		59	58	60	60	63	65	63	65	64	63
2000		55	55	57	58	60	62	62	63	61	62
2500		57	56	57	59	61	64	64	64	64	60
3150		59	56	59	60	62	64	66	66	64	61
4000		59	58	60	61	62	65	66	65	65	61
5000		55	52	55	56	59	59	60	62	60	59
6300		52	49	52	54	55	56	59	59	59	56
8000		54	49	53	55	55	59	60	60	58	58
10000		51	47<	50	52	55	55	56	57	57	57
OVERALL		81	81	81	81	81	81	81	82	83	88

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE# MEASURED SOUND PRESSURE LEVEL (DB)													IDENTIFICATION#
2													
OCTAVE BAND													
NOISE SOURCE/SUBJECT:													
GPC-28 COMPRESSOR													TEST RA-030-003
NEAR FIELD NOISE LEVELS													RUN 01
													06 APR 82
													PAGE J1
LOCATION/CONDITION													
FREQ	DISTANCE (M)-->	4	4	4	4	4	4	4	4	4	4	4	
ANGLE (DEG)-->	0	20	40	60	80	100	120	140	160	180	200	220	240
(HZ)	CONDITION----	A	A	A	A	A	A	A	A	A	A	A	A
31.5													
63													
125		75	74	74		72	72	68	60	59	71	71	70
250		68	67	63		64	65	64	62	59	61	61	
500		65	64	66		63	59	65	68	67	66	62	67
1000		61	64	66		65	65	63	63	60	60	61	62
2000		58	61	64		64	64	62	63	60	57	58	59
4000		57	61	64		64	63	62	63	60	57	58	59
8000		50	56	60		60	58	58	59	55	50	52	54
OVERALL		77	76	75		75	75	73	73	72	73	73	72

[illegible]

TABLE: MEASURES OF HUMAN NOISE EXPOSURE												IDENTIFICATION:	
3												OMEGA 3.2	
NOISE SOURCE/SUBJECT:												TEST RA-000-003	
GPC-28 COMPRESSOR												RUN 01	
NEAR FIELD NOISE LEVELS												06 APR 82	
												PAGE 41	
LOCATION/CONDITION													
DISTANCE (M)-->	4	4	4	4	4	4	4	4	4	4	4	4	4
ANGLE (DEG)-->	0	20	40	60	80	100	120	140	160	180	200	220	240
CONDITION-->	A	A	A	A	A	A	A	A	A	A	A	A	A
HAZARD/PROTECTION													
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT FAR													
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT FAR													
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)													
NO PROTECTION													
OASLC	77	76	73		70	78	75	77	77	77	76	73	72
OASLA	68	69	71		72	71	70	70	68	67	66	68	68
T	360	960	960		960	960	960	960	960	960	960	960	960
MINIMUM SPL EAR MUFFS													
OASLA*	55	54	55		54	54	50	51	51	52	52	50	50
T	360	960	960		960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS													
OASLA*	50	49	51		50	50	45	48	48	49	49	45	44
T	960	960	960		960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS													
OASLA*	45	44	46		47	47	45	46	44	44	42	44	45
T	360	960	960		960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS													
OASLA*	32	32	35		34	34	31	33	32	32	32	30	30
T	960	960	960		960	960	960	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT													
OASLA*	44	44	47		46	46	43	45	44	44	43	41	41
T	960	960	960		960	960	960	960	960	960	960	960	960
COMMUNICATION													
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)													
PSIL	62	63	65		66	66	64	65	62	61	60	62	63
ANNOYANCE													
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)													
TONE CORRECTION (C IN DB)													
PNLT	82	84	87		87	96	84	85	83	80	81	83	82
C	2	1	1		1	1	1	1	2	1	2	2	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE												IDENTIFICATION
3												OMEGA 3.2
												TEST BA-000-003
NOISE SOURCE/SUBJECT:												PUN 02
GPC-28 COMPRESSOR												06 APR 82
NEAR FIELD NOISE LEVELS												PAGE 02
LOCATION/CONDITION												
DISTANCE (M)-->	4	4	4	4	4	2	2	2	2	2	2	2
ANGLE (DEG)-->	260	280	300	320	340	0	20	40	60	80	100	120
CONDITION-->	A	A	A	A	A	A	A	A	1	A	A	A
HAZARD/PROTECTION												
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR												
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DB) AT EAR												
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)												
NO PROTECTION												
OASLC	72	74	75	76	78	83	83	82	84	84	84	81
OASLA	63	71	72	71	69	73	74	77	78	73	79	75
T	960	960	960	960	960	960	960	960	960	960	960	960
MINIMUM 2PL EAR MUFFS												
OASLA*	49	51	57	53	55	60	59	59	50	60	60	56
T	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS												
OASLA*	43	46	48	48	50	56	52	54	55	56	56	52
T	960	960	960	960	960	960	960	960	960	960	960	960
V-51R EAR PLUGS												
OASLA*	44	46	46	45	46	51	51	51	57	53	54	50
T	960	960	960	960	960	960	960	960	960	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS												
OASLA*	30	33	33	33	33	38	38	39	40	41	41	39
T	960	960	960	960	960	960	960	960	960	960	960	960
H-132 GROUND COMMUNICATION UNIT												
OASLA*	42	44	45	45	45	50	50	51	52	53	57	51
T	960	960	960	960	960	960	960	960	960	960	960	960
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	63	65	66	65	63	66	68	70	72	72	73	71
ANNNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNB)												
TONE CORRECTION (C IN DB)												
PNLT	87	86	88	87	84	88	89	92	94	94	94	93
C	0	2	3	2	2	1	1	2	2	1	2	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE											IDENTIFICATION:	
3											OMEGA 3.2	
											TEST 9A-000-003	
NOISE SOURCE/SUBJECT: (OPERATIONS:)											RUN 03	
GPC-24 COMPRESSOR (COMPRESSOR ON)											06 APR 82	
NEAR FIELD NOISE LEVELS ()											PAGE M3	

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE 1: MEASURED SOUND PRESSURE LEVEL (DB)																			IDENTIFICATION:
1/3 OCTAVE BAND																			OMEGA 1.4
DISTANCE = 10 METERS																			TEST BA-000-037
NOISE SOURCE/SUBJECT:																			RUN 01
GPI-2A COMPRESSOR																			06 APR 42
FAR FIELD NOISE LEVELS																			PAGE 7
OPERATIONS:																			
COMPRESSOR ON																			
METEOROLOGY:																			
TEMP = 23 C																			
BAR PRESS = 1,061 MM HG																			
REL HUMID = 69 %																			
FREQ (HZ)																			ANGLE (DEGREES)
25																			
31.5																			
40																			
50																			
63																			
80																			
100																			
125																			
160																			
200																			
250																			
315																			
400																			
500																			
630																			
800																			
1000																			
1250																			
1600																			
2000																			
2500																			
3150																			
4000																			
5000																			
6300																			
8000																			
10000																			
OVERALL																			
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																			

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																	IDENTIFICATION:	
1/3 OCTAVE BAND																		
DISTANCE = 10 METERS																		
NOISE SOURCE/SUBJECT:																	OMEGA 1.4	
GPC-28 COMPRESSOR																	TEST 98-900-003	
FAR FIELD NOISE LEVELS																	RUN 02	
OPERATION:																	TEMP = 29 C	
COMPRESSOR ON																	BAR PRESS = 1.013 M Hg	
																	REL HUMID = 69 %	
																	06 APR 92	
																	PAGE 2	
FREQ																	ANGLE (DEGREES)	
(HZ)																		
190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350																		
25																		
31.5																		
40																		
50																		
63																		
80																		
100																	65< 66< 65< 65< 64< 67< 62< 63< 63< 64< 56< 66< 67<	
125																	61< 62< 62< 61< 61< 63< 64< 64< 64< 66< 67<	
160																	59< 58< 58< 58< 57< 60< 62< 64< 65< 67< 67<	
200																	59< 57< 53< 58< 58< 57< 59< 62< 64< 66< 66<	
250																		
315																	55< 55< 54< 58< 53< 53< 54< 54< 54< 53< 54< 56< 56< 59<	
400																	51< 55< 55< 52< 55< 56< 56< 55< 56< 55< 55< 54< 53< 53< 59<	
500																	49< 50< 52< 53< 53< 52< 52< 53< 52< 50< 50< 50< 44< 51< 51<	
630																	48< 48< 46< 43< 47< 49< 48< 47< 48< 50< 48< 51< 48< 46< 50<	
800																	48< 49< 48< 50< 48< 49< 47< 40< 49< 49< 50< 52< 49< 48< 49< 49<	
1000																	51< 53< 53< 53< 50< 55< 55< 53< 55< 53< 55< 56< 53< 52< 50< 51< 51<	
1250																	48< 47< 50< 51< 50< 53< 53< 52< 54< 54< 52< 54< 53< 52< 52< 50< 54<	
1600																	46< 45< 47< 43< 49< 49< 51< 51< 50< 50< 51< 51< 51< 48< 47< 47< 46<	
2000																	46< 46< 46< 46< 47< 49 48 48 49 50 50 51 51 50 49 47< 45< 46<	
2500																	45< 46< 46< 47< 48 49 43 43 51 51 51 51 51 50 49 47< 45< 45<	
3150																	43< 43< 45< 45< 47 48 40 48 48 47 50 51 49 50 47 46 42<	
4000																	47 50 52 50 51 53 54 54 54 53 54 55 55 54 51 49 47<	
5000																	42 45 45 45 47 46 47 47 48 48 49 49 49 49 47 45 42<	
6300																	39< 43 44 44 43 45 44 44 45 46 47 47 47 47 45 47 40<	
8000																	41< 43< 42< 43< 43< 43< 44< 45< 45< 46< 47< 47< 46< 44< 42<	
10000																	40< 42< 41< 42< 40< 40< 41< 42< 42< 43< 44< 44< 45< 43< 41<	
OVERALL																	68 67 68 68 66 69 66 64 65 66 67 63 69 70 71 73 73	
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																		

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

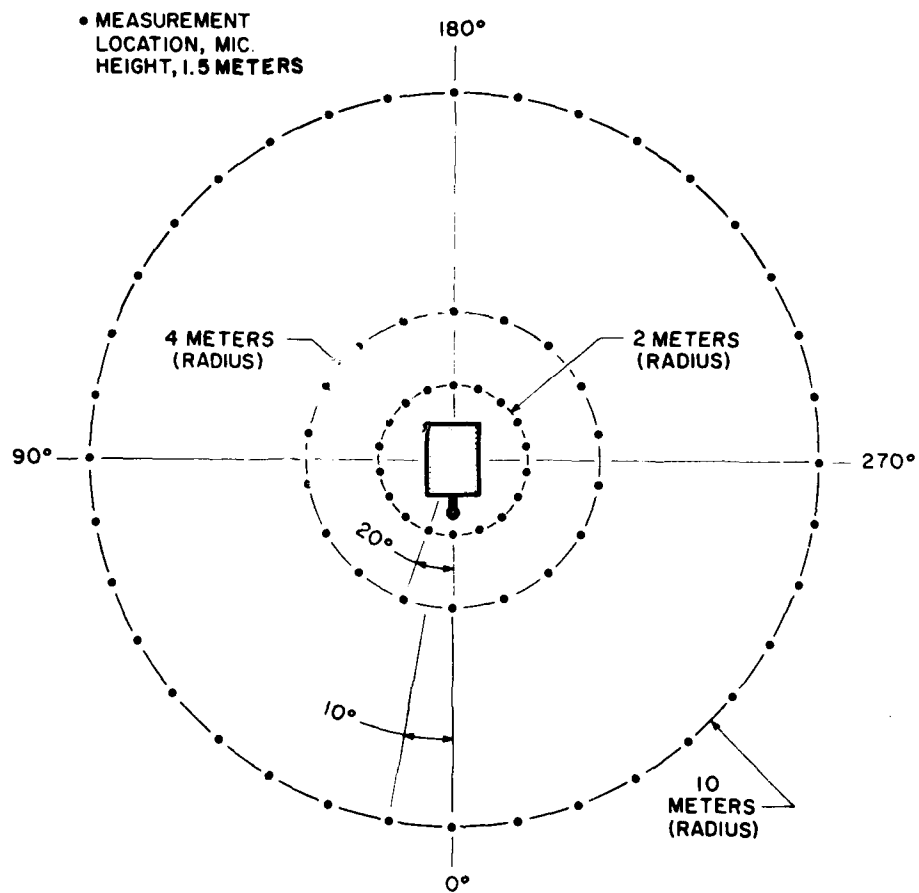


Figure 1. Measurement Locations

FIGURE: NORMALIZED FARFIELD NOISE LEVELS			IDENTIFICATION:
2	DISTANCE = 10 METERS		OMEGA 1.4
NOISE SOURCE/SUBJECT:			TEST BA-103-001
GPC-2A COMPRESSOR			RUN 01
FAR FIELD NOISE LEVELS			06 APR 42
			PAGE 4
OPERATION:			
COMPRESSOR ON			
METEOROLOGICAL:			
TEMP = 15 C			
BAR PRESS = 1060 MM HG			
REL HUMID = 70 %			

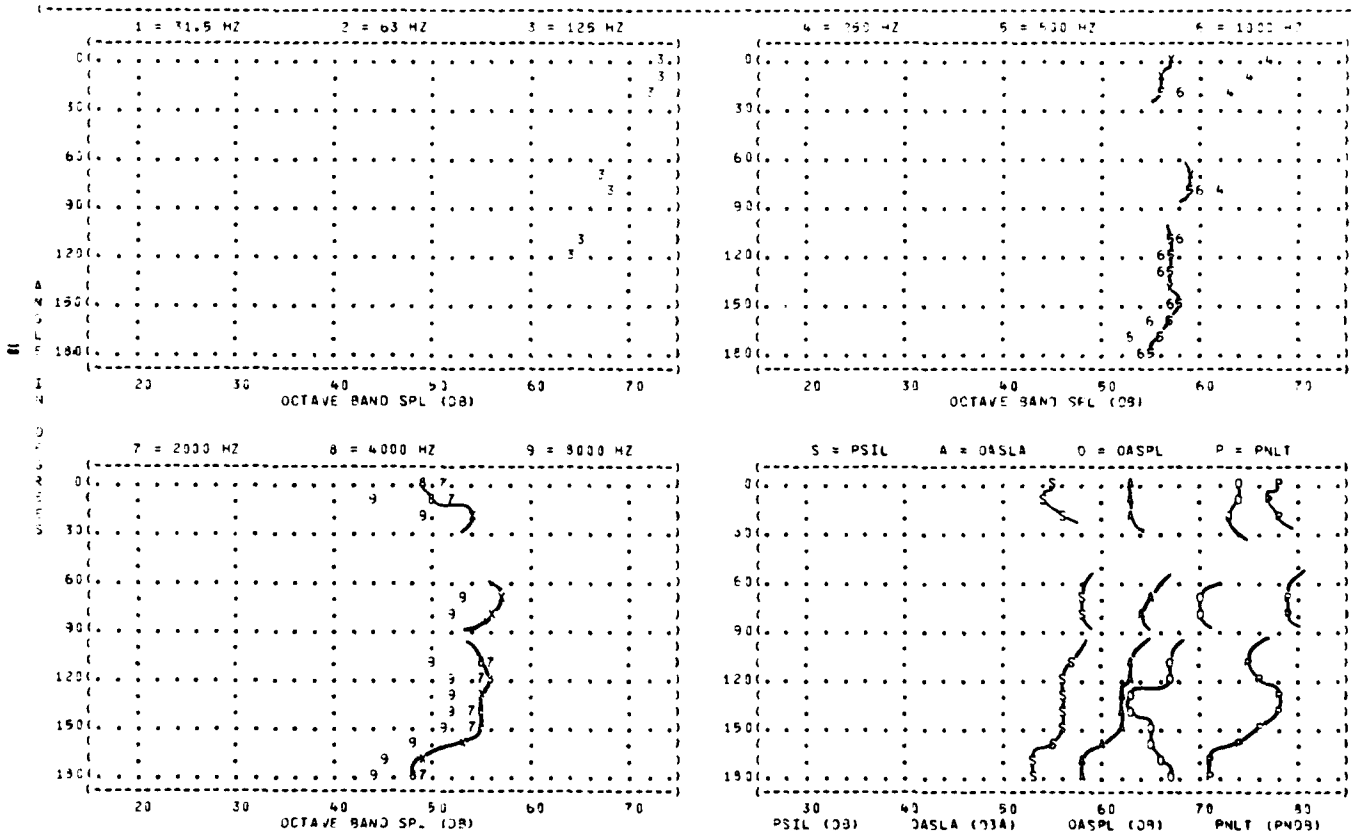


FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

2

DISTANCE = 10 METERS

NOISE SOURCE/SUBJECT:
GPC-20 COMPRESSOR
FAR FIELD NOISE LEVELS

OPERATION:
COMPRESSOR ON

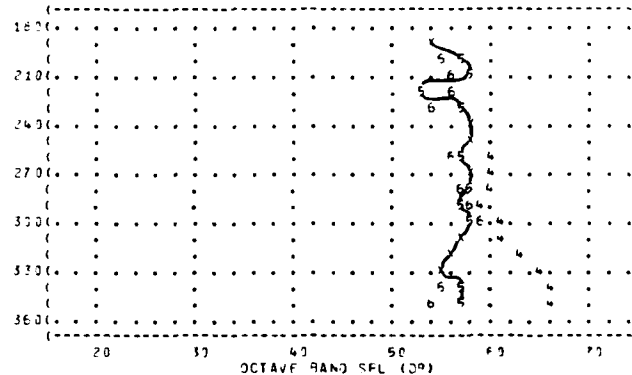
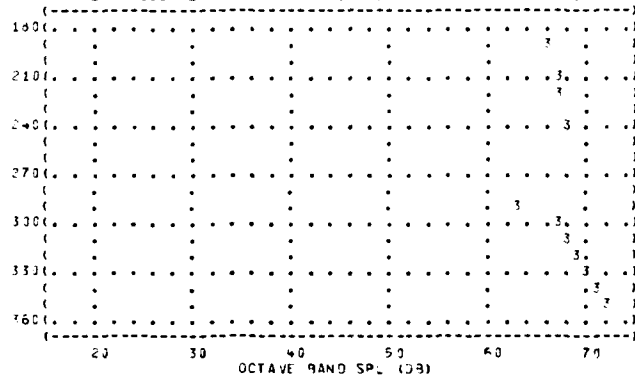
METEOROLOGY:
TEMP = 15 C
BAR PRESS = 1.060 M HG
WFL HUMID = 70 %

IDENTIFICATION

OMEGA 114
TEST 43-100-10
RUN 11
06 APR 57
FAC

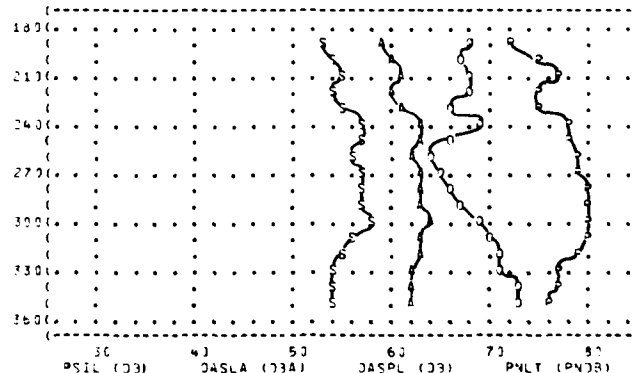
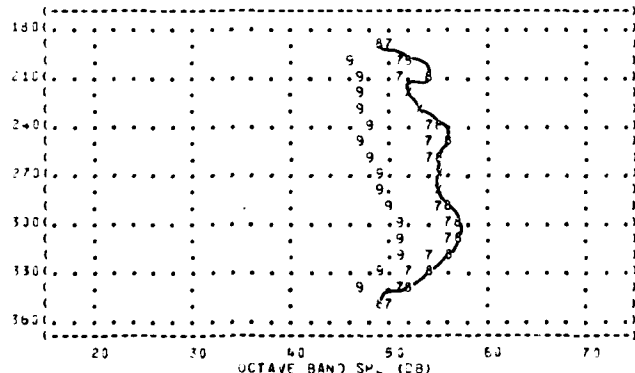
1 = 31.5 HZ 2 = 63 HZ 3 = 125 HZ

4 = 250 HZ 5 = 500 HZ 6 = 1000 HZ

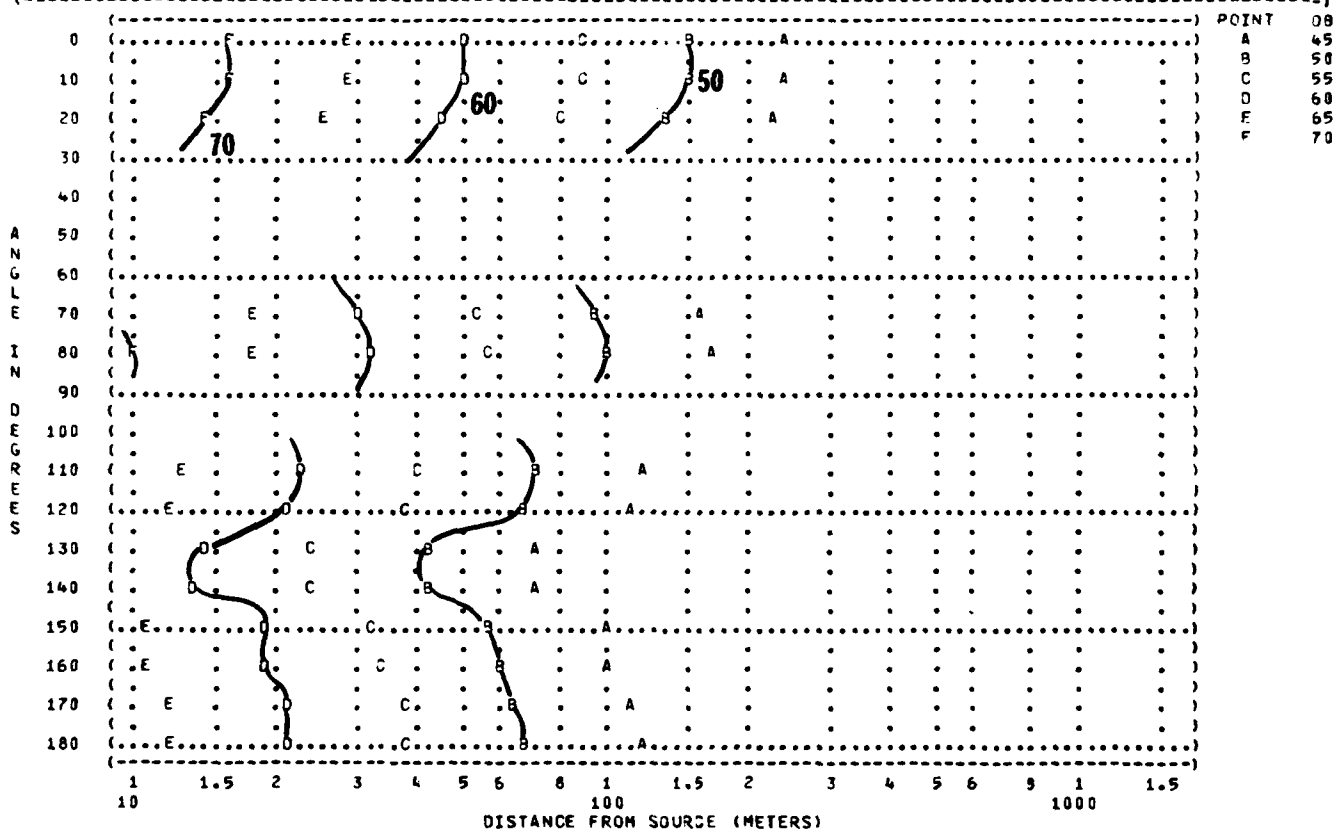


7 = 2000 HZ 8 = 4000 HZ 9 = 8000 HZ

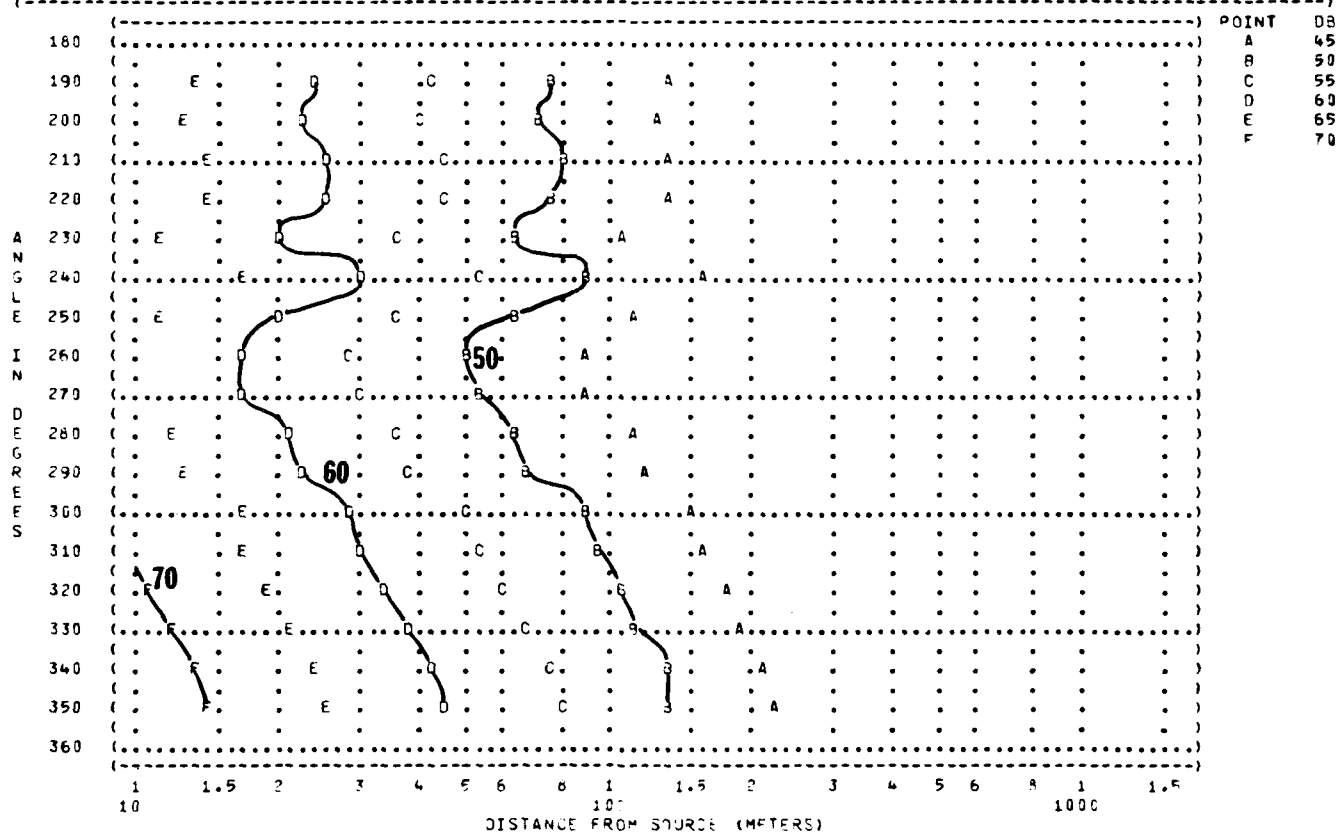
S = PSIL A = DASLA U = DASPL D = PNLT



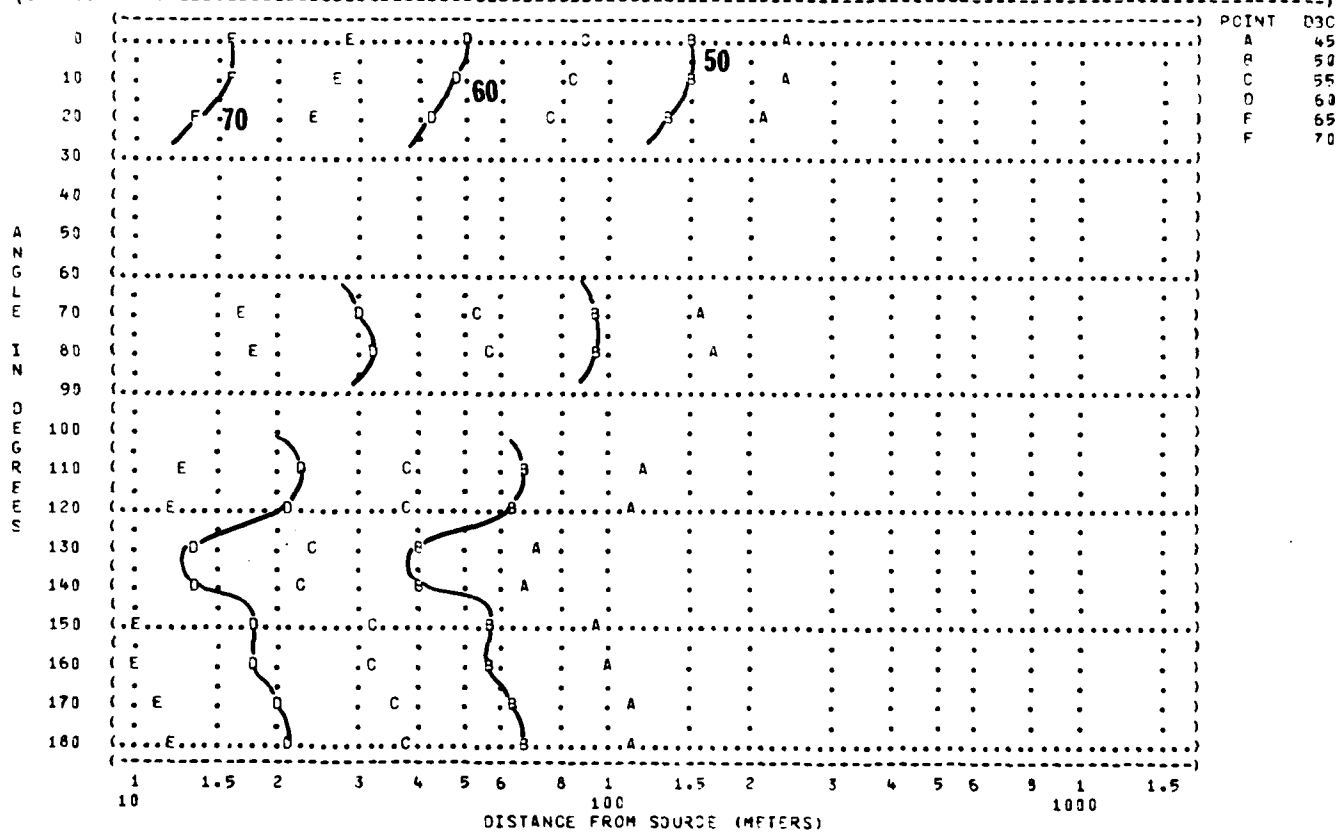
(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL))
 (3 EQUAL LEVEL CONTOURS (DB)) IDENTIFICATION:)
 () OMEGA 1.4)
 () TEST 9A-000-003)
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR) COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS)) BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 11)



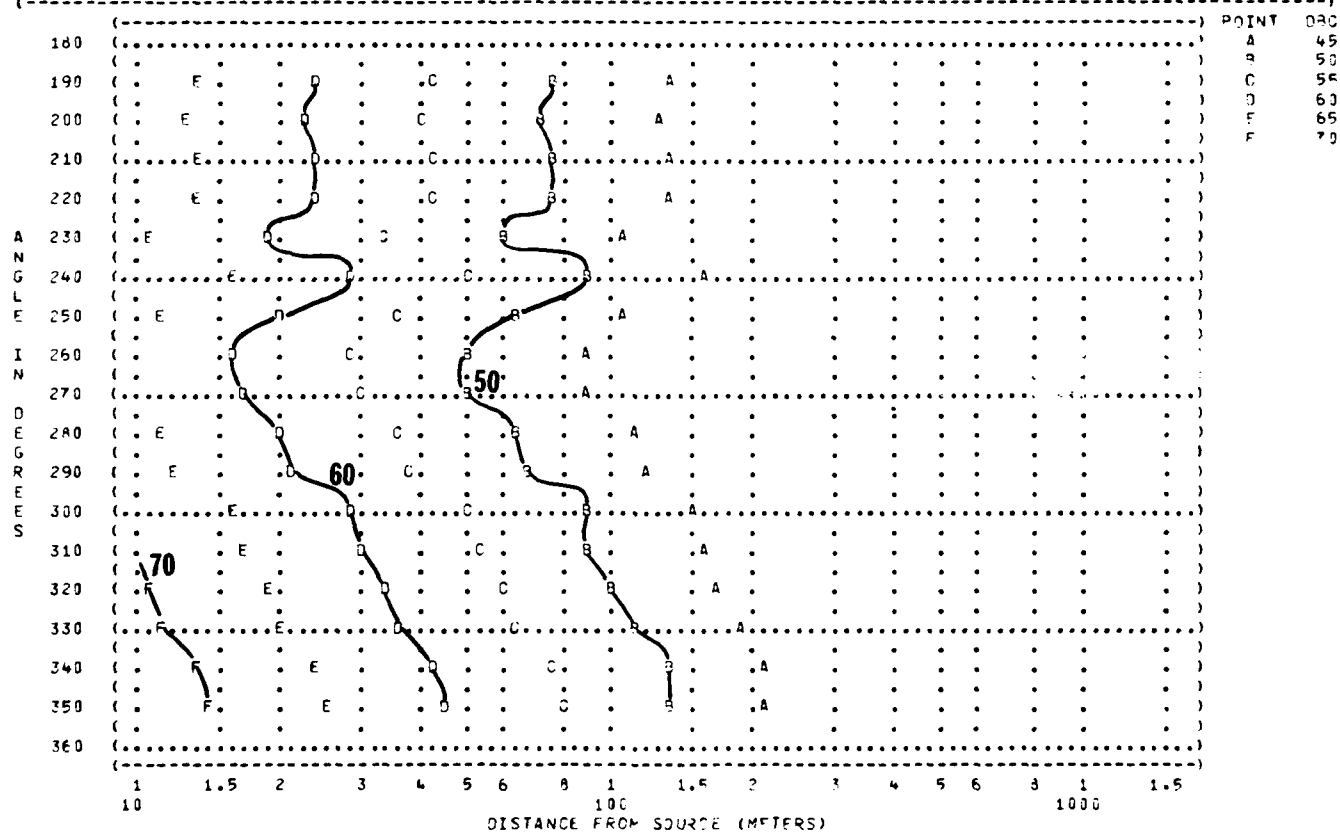
(FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL))
 (3 EQUAL LEVEL CONTOURS (DB))
 (IDENTIFICATION:)
 () OMEGA 1.4)
 (TEST BA-000-003)
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-2A COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 11)



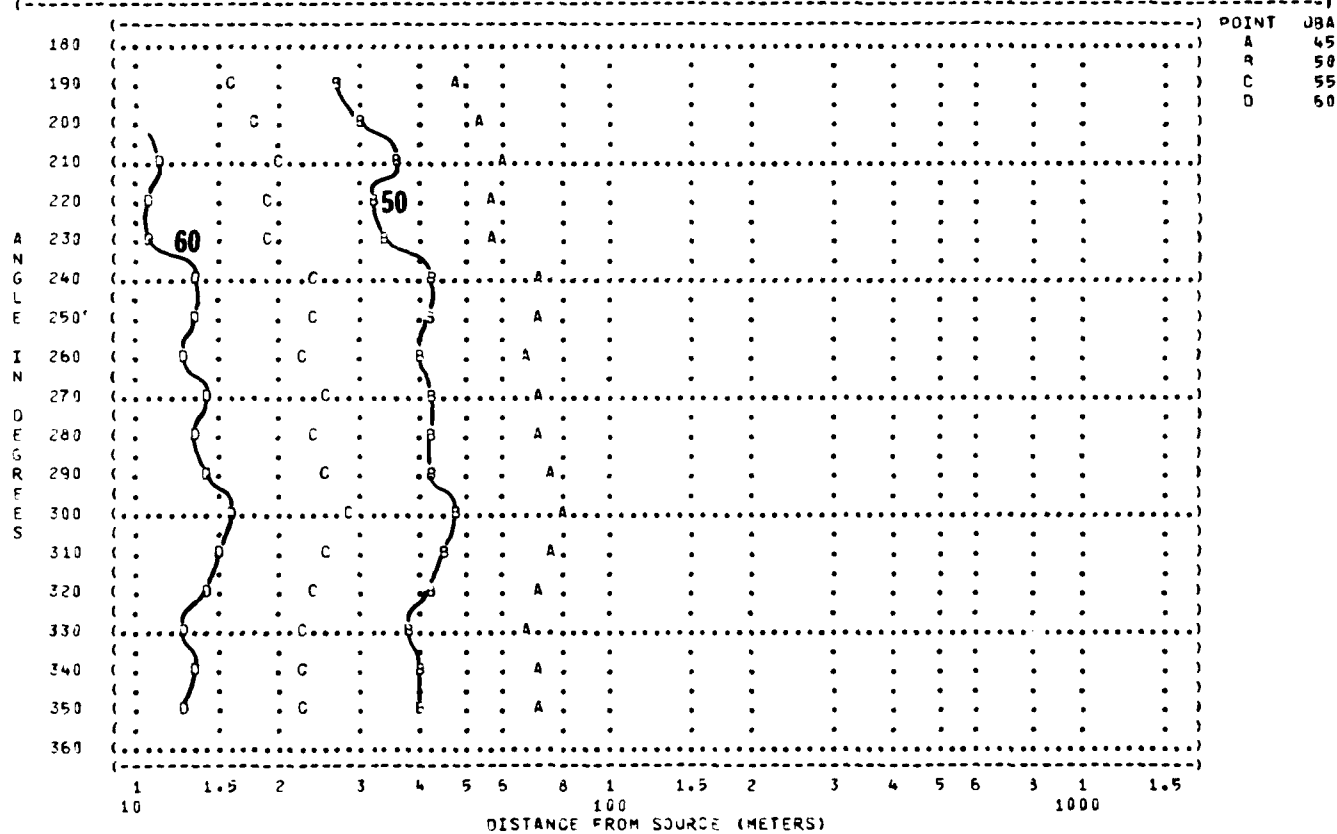
(FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)) IDENTIFICATION:)
 (4 EQUAL LEVEL CONTOURS (DBC)))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 12)



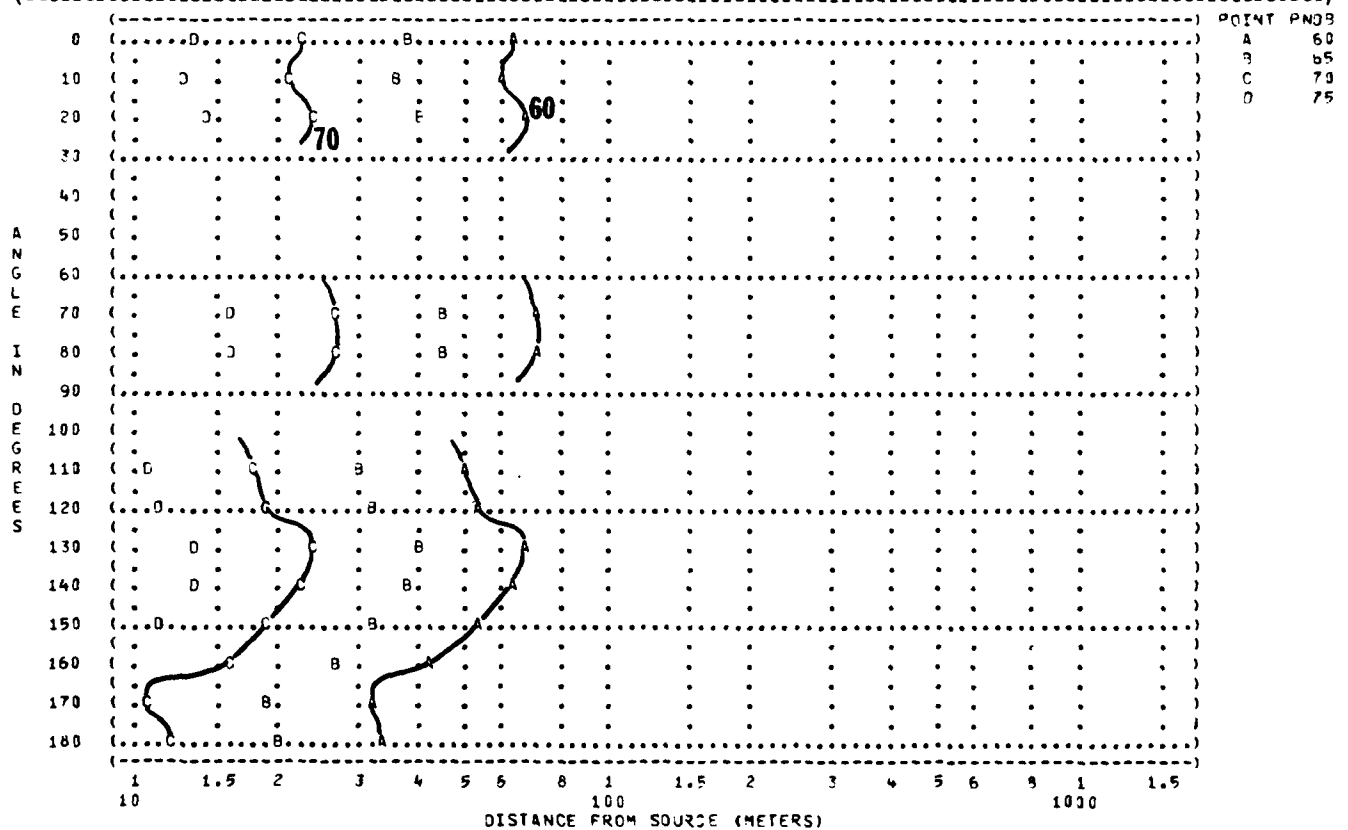
(FIGURE: C-WEIGHTED OVERALL SOUND LEVEL (OASLC)) IDENTIFICATION:)
 (4 EQUAL LEVEL CONTOURS (CBC)))
 ())
 () OMEGA 1.4)
 (TEST BA-030-003)
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 ())
 () PAGE 12)



(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA) (5 EQUAL LEVEL CONTOURS (DBA)			) IDENTIFICATION:)) OMEGA 1.4)) TEST BA-000-003)
(NOISE SOURCE/SUBJECT: (GPC-28 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATION: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M HG) REL HUMID = 70 %	) RUN 02)) 06 APR 82)) PAGE 13)



(FIGURE: PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT))
 (6 EQUAL LEVEL CONTOURS (PNDB))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) IDENTIFICATION:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C))
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG))
 () REL HUMID = 70 %))
 () PAGE 14)



6

) CMEGA 1-6)

1 OMEGA 1.6 1

--) TEST RA-000-003)

(FAR FIELD NOISE LEVELS

COMPRESSOR ON

1) METEOROLOGY:

TEMP = 15 C

RAF PRESS = .760 = 43

REL HUMID = 70 %

1 RUN 02

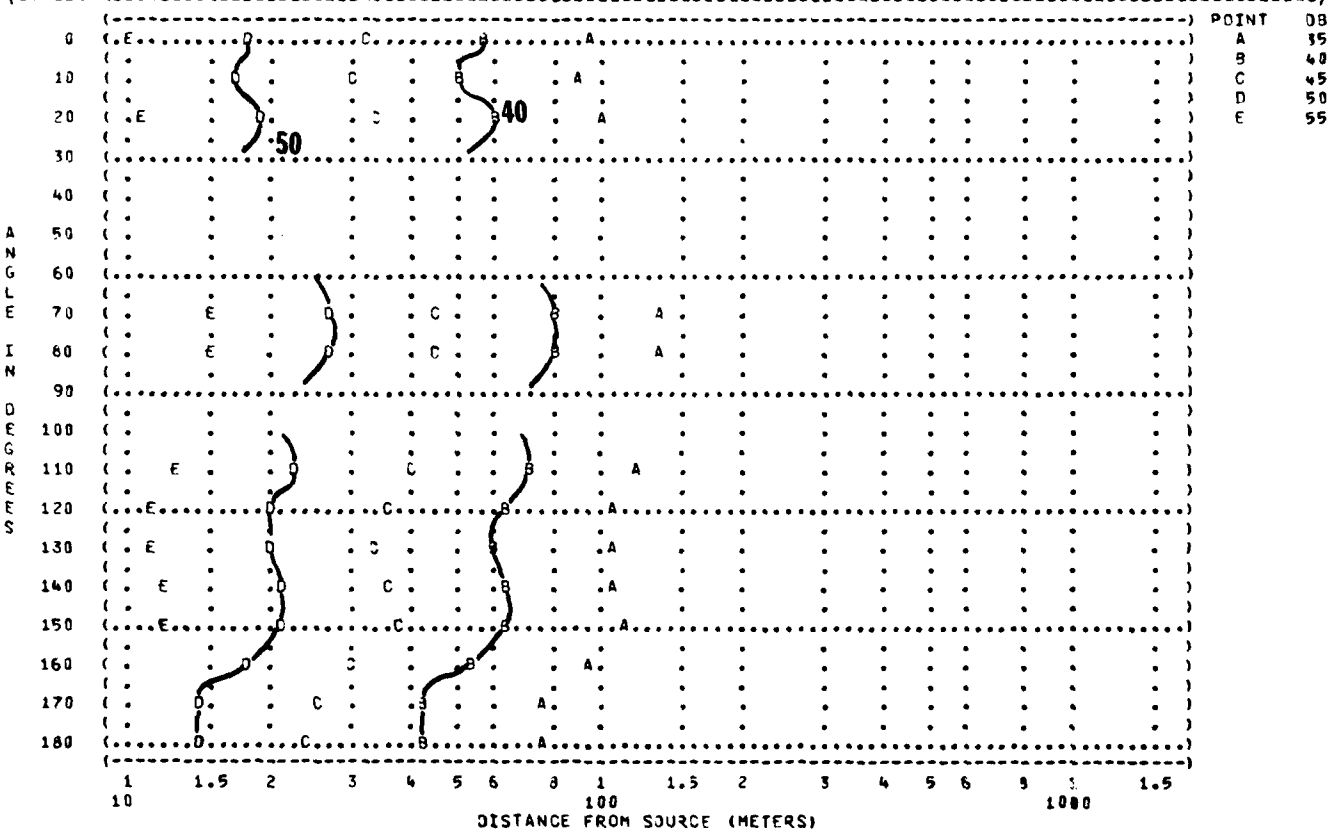
1

06 APR 82

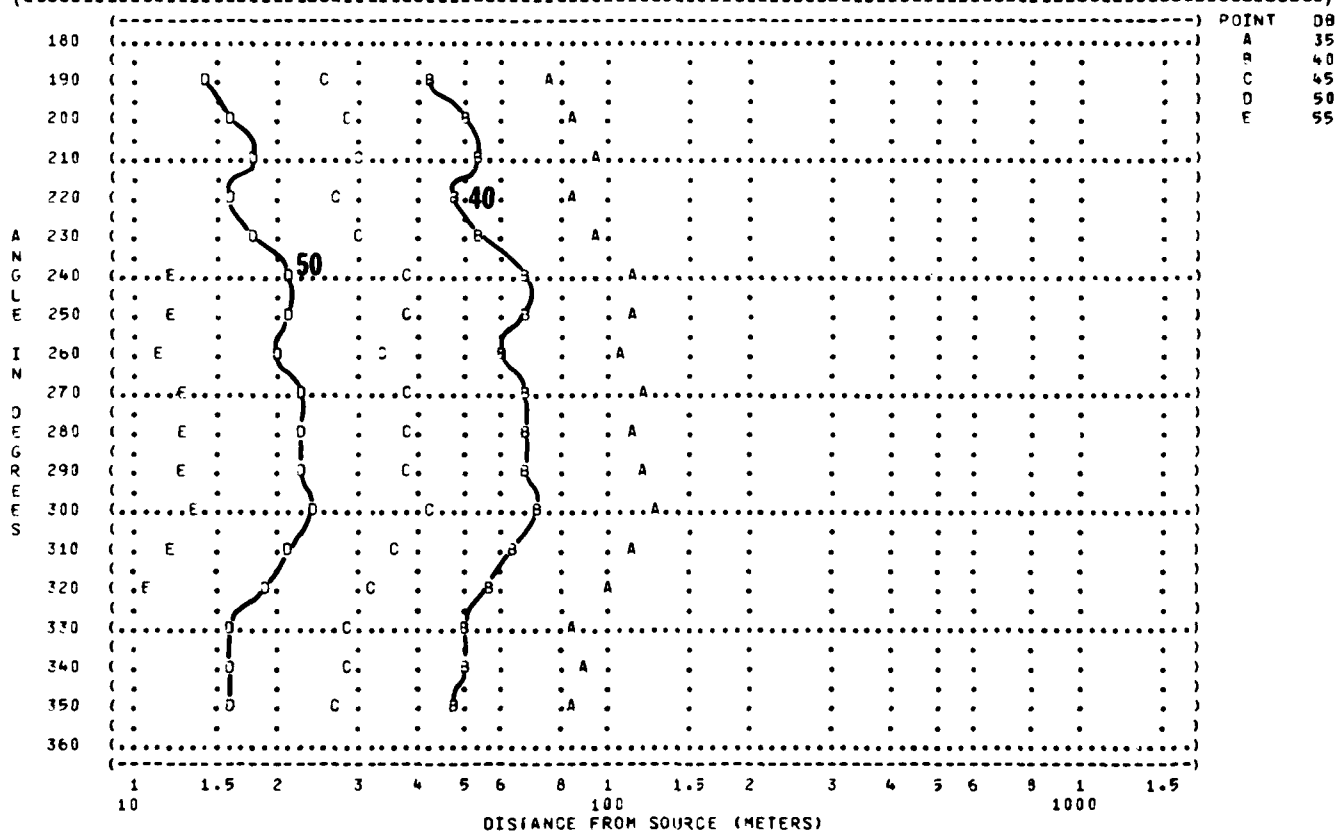
)



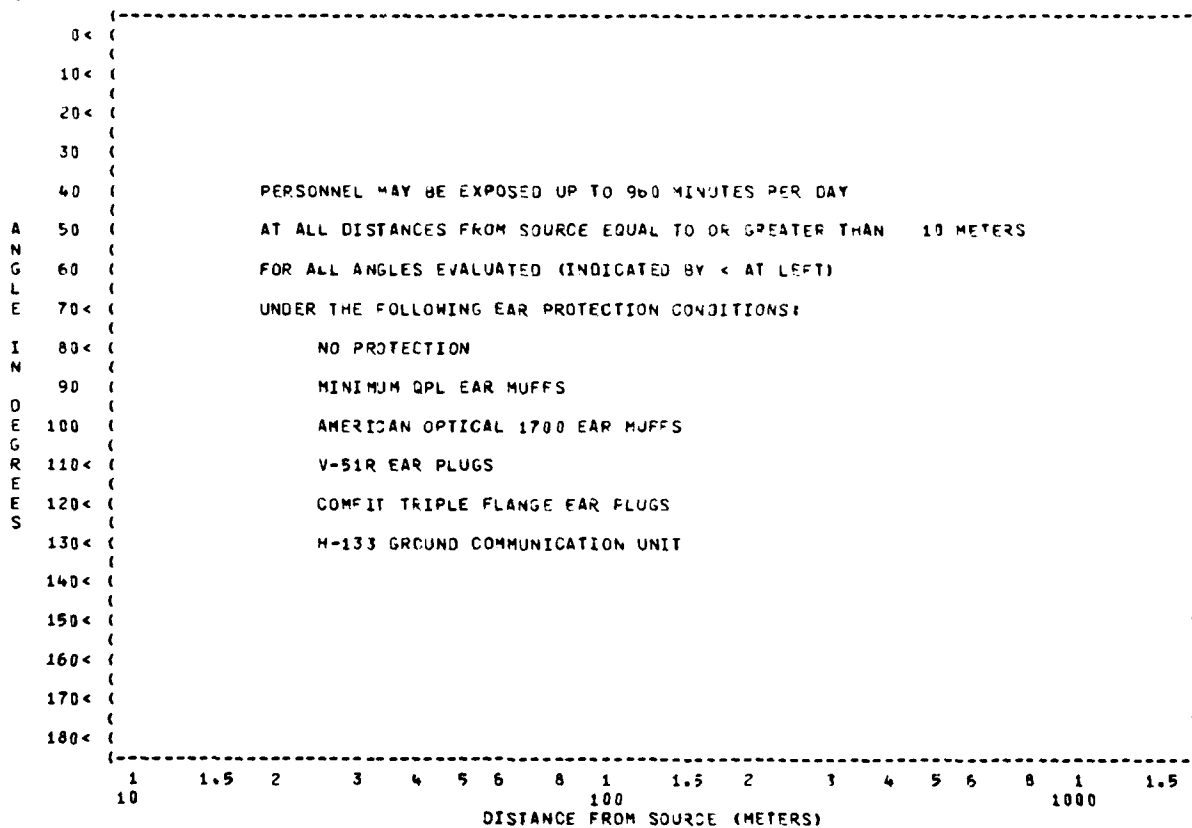
(FIGURE 7) (FIGURE 7)
 (7) (7)
 (NOISE SOURCE/SUBJECT:) (OPERATIONS:) (METEOROLOGY:) (IDENTIFICATION:)
 (GPC-28 COMPRESSOR) (COMPRESSOR ON) (TEMP = 15 C) (TEST BA-000-003)
 (FAR FIELD NOISE LEVELS) () (BAR PRESS = .760 M HG) (RUN 01)
 () () (REL HUMID = 70 %) (06 APR 87)
 () () () (PAGE 15)



(FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)			IDENTIFICATION:
(7 EQUAL LEVEL CONTOURS (C9)			
(NOISE SOURCE/SUBJECT:			OMEGA 1.4
(GPC-28 COMPRESSOR			TEST BA-000-003
(FAR FIELD NOISE LEVELS			RUN 02
(OPERATIONS:			06 APR 82
(COMPRESSOR ON			PAGE 15
(METEOROLOGY:			
(TEMP = 15 C			
(BAR PRESS = .760 M HG			
(REL HUMID = 70 %			



(FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)) (8 EQUAL TIME CONTOURS (MINUTES))) IDENTIFICATION:)) OMFGA 1.4)) TEST RA-003-003)) RUN 01)) 06 APR 87)) PAGE 5)
(NOISE SOURCE/SUBJECT:) (CPC-28 COMPRESSOR) (FAR FIELD NOISE LEVELS)	(OPERATIONS:) (COMPRESSOR ON) ()) METEOROLOGY:)) TEMP = 15 C)) BAR PRESS = .750 M HG)) REL HUMID = 70 %))	




```

(-----)
( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )
( 9 EQUAL LEVEL CONTOURS (CB) ) )
( 31.5 HZ OCTAVE BAND ) )
(-----)
( NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY: ) )
( GPC-28 COMPRESSOR ( COMPRESSOR ON ) TEMP = 15 C ) )
( FAR FIELD NOISE LEVELS ( ) BAR PRESS = .760 M HG ) 06 APR 82 )
( ) REL HUMID = 70 % ) )
( ) PAGE 16 )
(-----)
( NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0) )
( OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL. )
(-----)

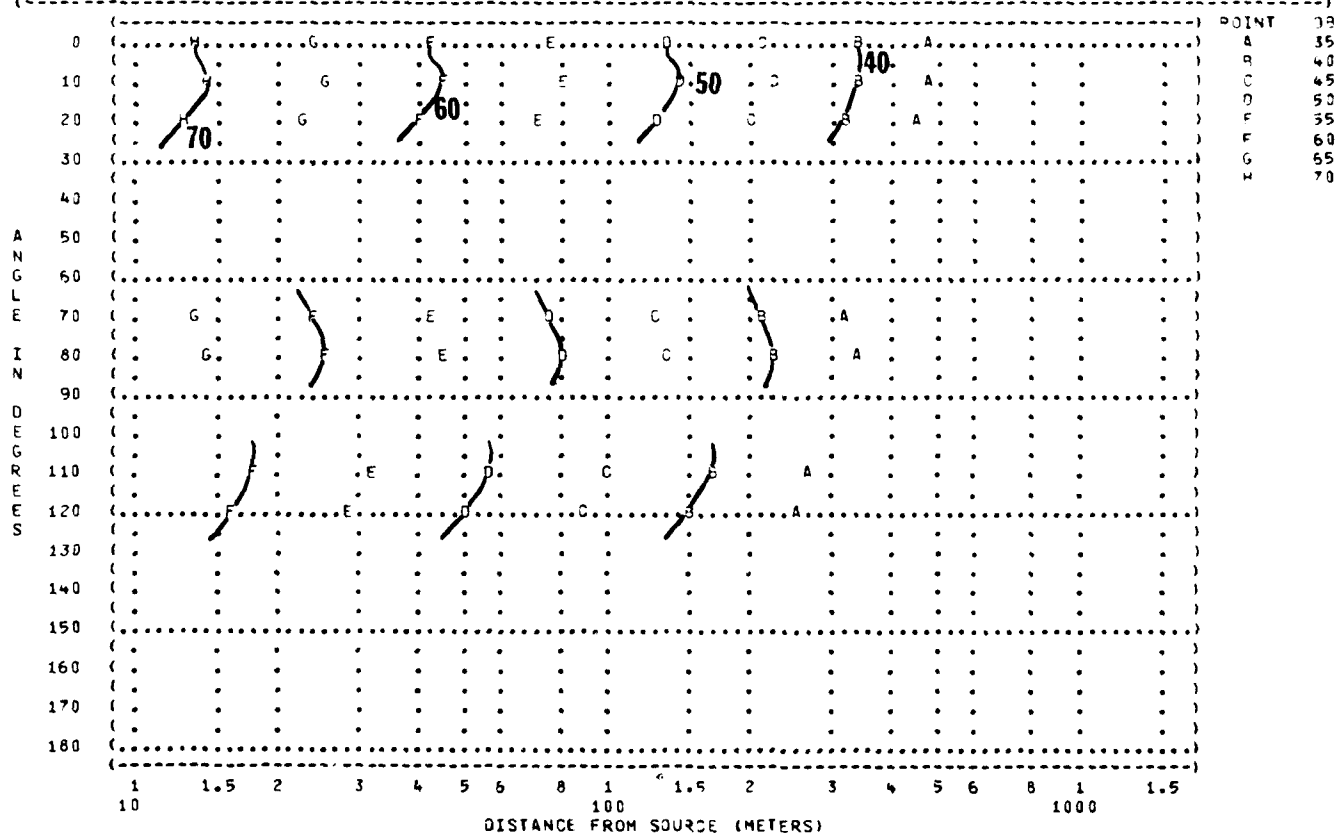
```

(FIGURE: SOUND PRESSURE LEVEL (SPL)			(IDENTIFICATION:)
(9	(EQUAL LEVEL CONTOURS (DB)		()
(	( 31.5 HZ OCTAVE BAND		()
(-----)			()
(NOISE SOURCE/SUBJECT:	(OPERATION:	(METEOROLOGY:	()
(GPC-28 COMPRESSOR	(COMPRESSOR ON	(TEMP = 15 C	()
(FAR FIELD NOISE LEVELS	(	( BAR PRESS = .760 M HG	()
(	(	( REL HUMID = 70 %	()
(((()
(-----)			()
(NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0)			()
(OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.			()
(()
(-----)			()

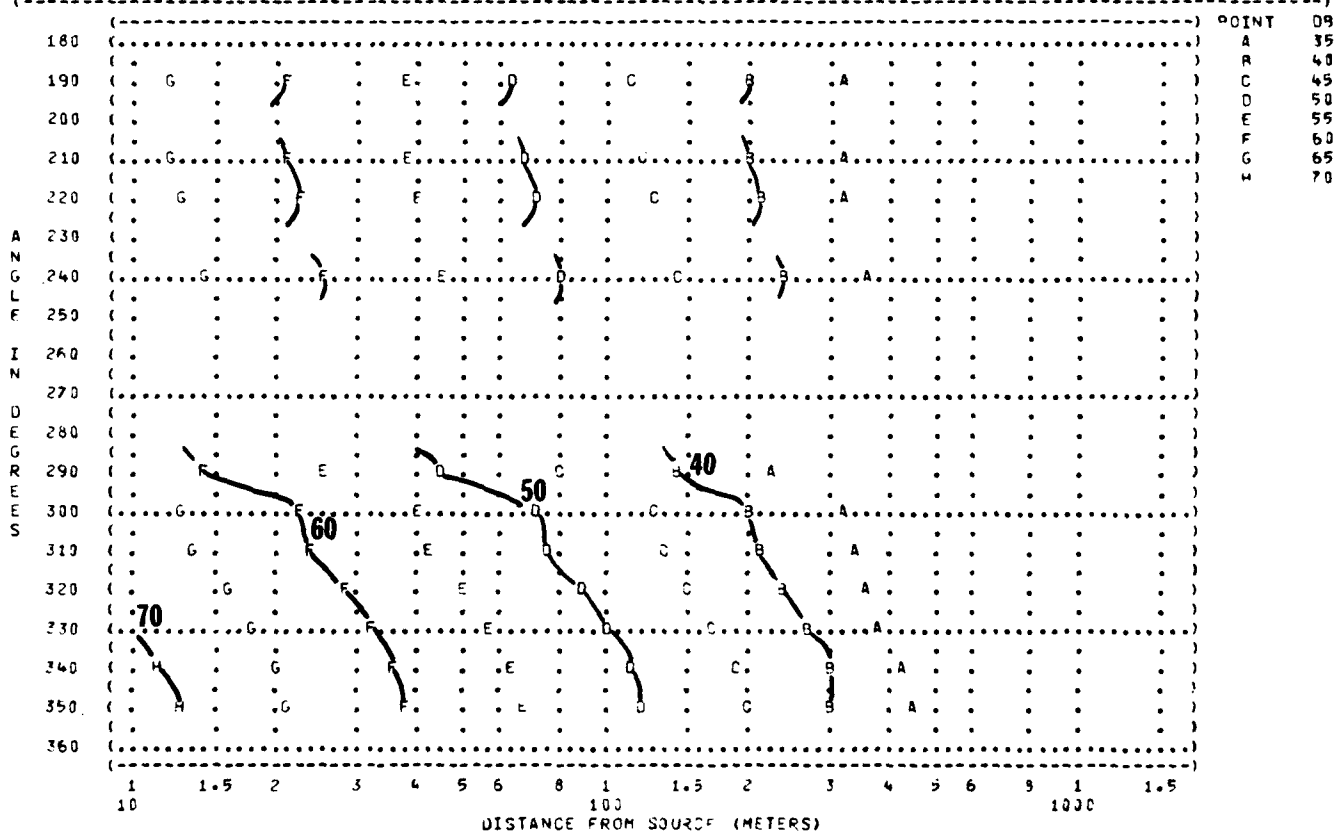
(-----)
 (FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (DB)))
 (63 HZ OCTAVE BAND) OMEGA 1.4)
 (-----)
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) TEST RA-000-003)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C) RUN 01)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG) 06 APR 92)
 (() REL HUMID = 70 %) PAGE 17)
 (-----)
 (NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0))
 (OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.)
 (-----)

(FIGURE: SOUND PRESSURE LEVEL (SPL)			) IDENTIFICATION:)
(9	(EQUAL LEVEL CONTOURS (DB)))
(	( 63 HZ OCTAVE BAND))
(-----)))
(NOISE SOURCE/SUBJECT:	(OPERATION:	) METEOROLOGY:	) TEST 9A-000-003)
(GPC-28 COMPRESSOR	(COMPRESSOR ON	) TEMP = 15 C	) RUN 02)
(FAR FIELD NOISE LEVELS	(	) BAR PRESS = .760 M HG	) 06 APR 82)
(	(	) REL HUMID = 70 %))
(	(	)	) PAGE 17)
(-----)))
(NO CONTOUR DATA---EITHER NO INPUT DATA WERE COMPUTED (=9999.0)))
(OR MINIMUM CONTOUR LEVEL REQUESTED IS GREATER THAN MAXIMUM COMPUTED LEVEL.))
(-----)))

(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (CB)))
 (125 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) TEST RA-000-003)
 (GPC-24 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C) RUN 01)
 (FAR FIELD NOISE LEVELS () BAR PRESS = 1.013 M HG) 06 APR 92)
 () REL HUMID = 70 %))
 () PAGE 18)



(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (125 HZ OCTAVE BAND			) IDENTIFICATION:))) OMEGA 1.4) TEST 9A-000-003) RUN 02) 06 APR 92) PAGE 1A
(NOISE SOURCE/SUBJECT: (GPC-28 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATION: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 MM HG) REL HUMID = 70 %	



9

) OMEGA 1.4)

TEST PA-020-003)

TEST 22-000-003)
RUN 02)

GPC-28 COMPRESSOR

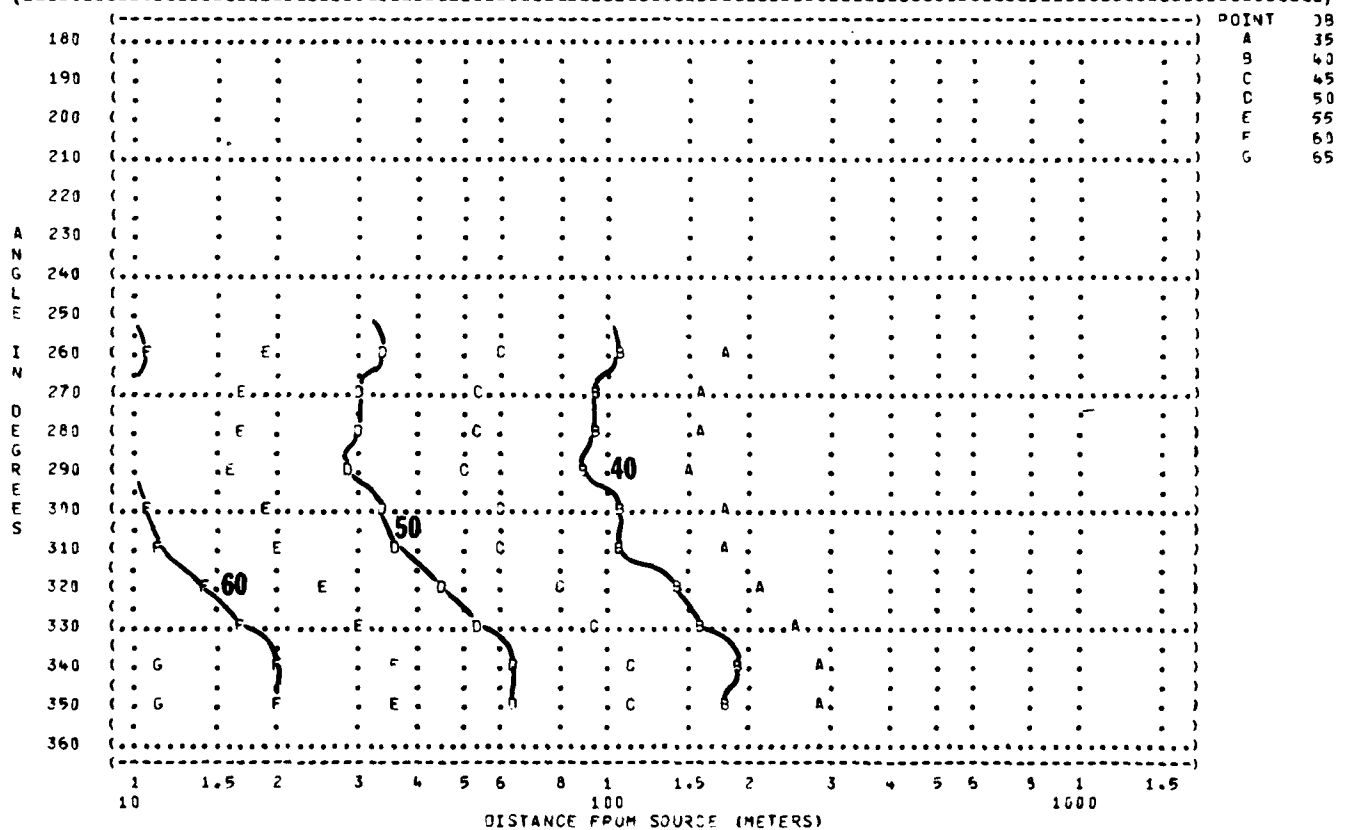
COMPRESSOR ON

) TEMP

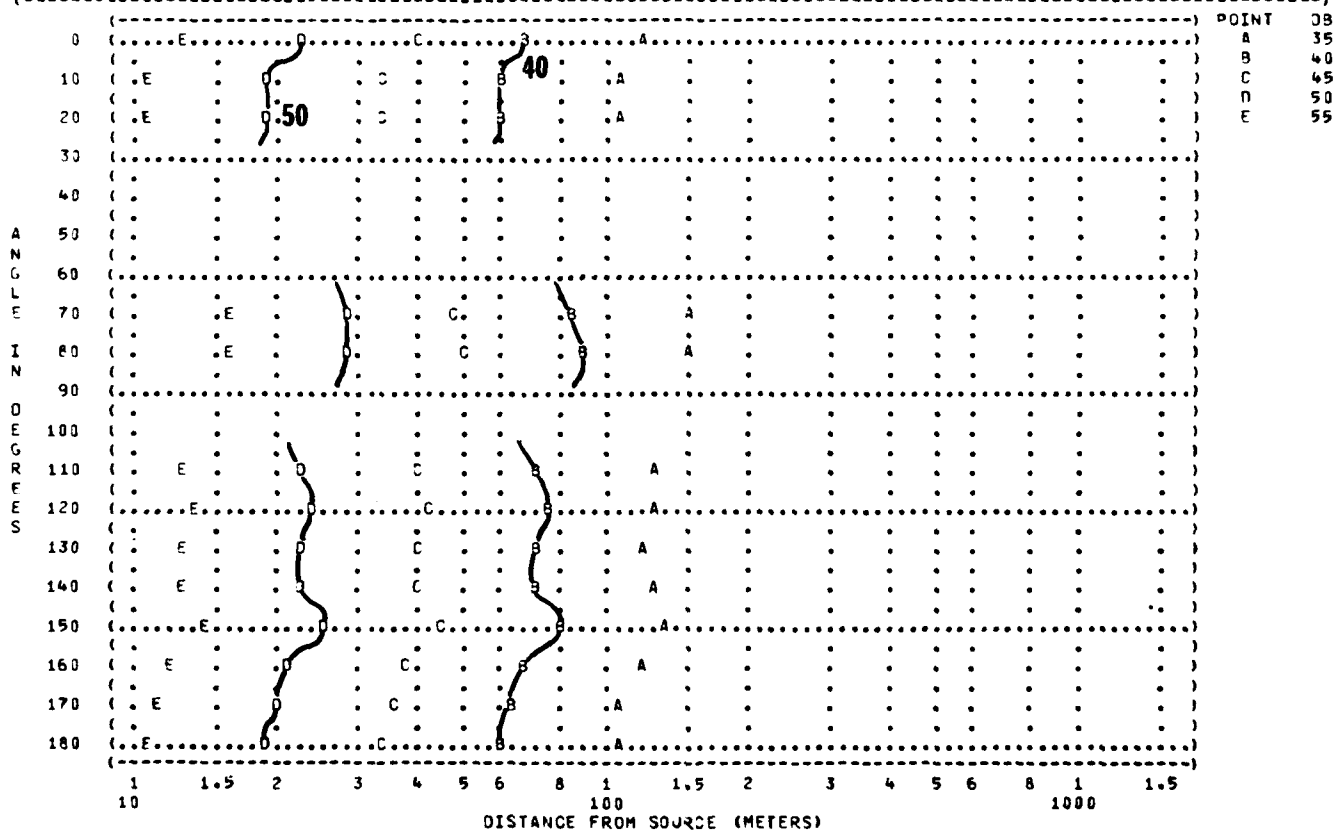
BAR PRESS = .760 M HG

REL HUMID = 70 %

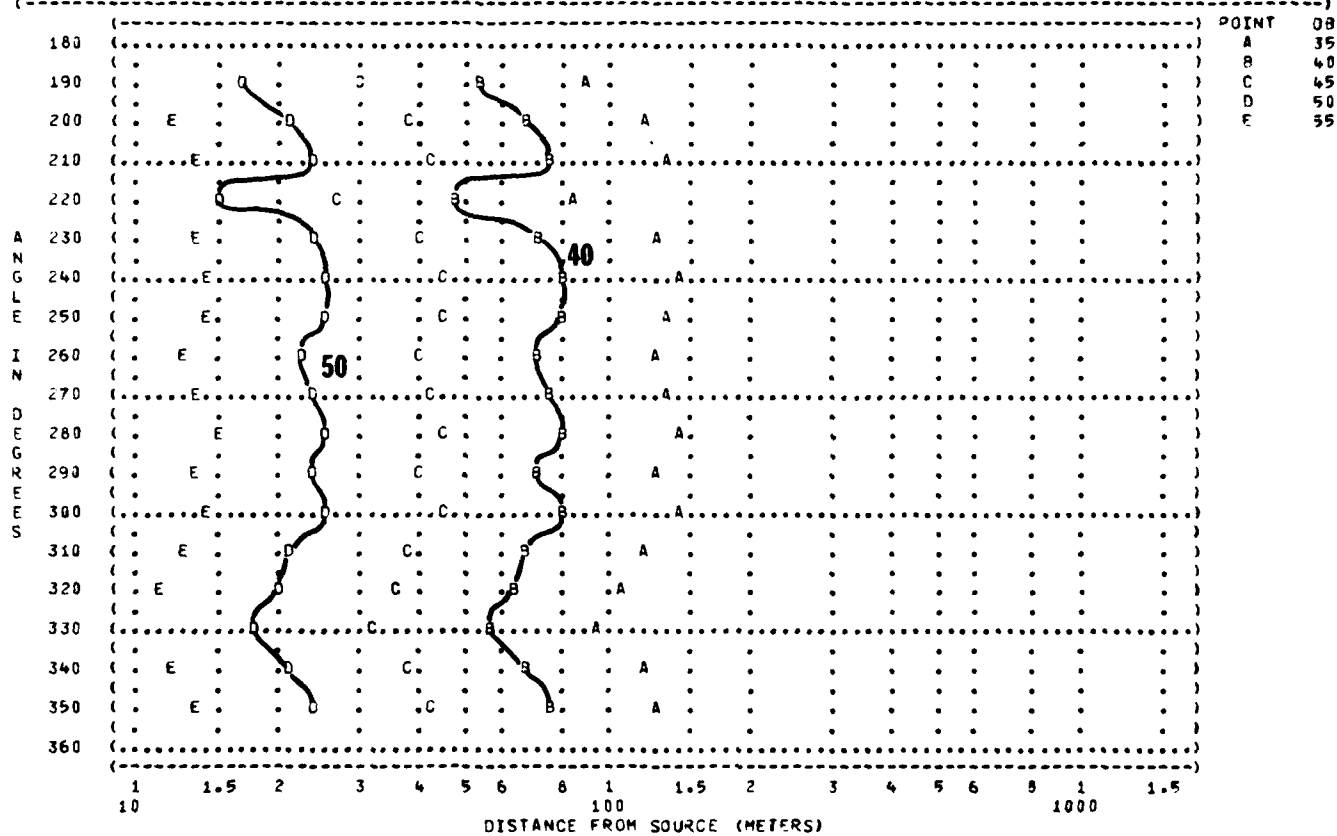
) PAGE 19)



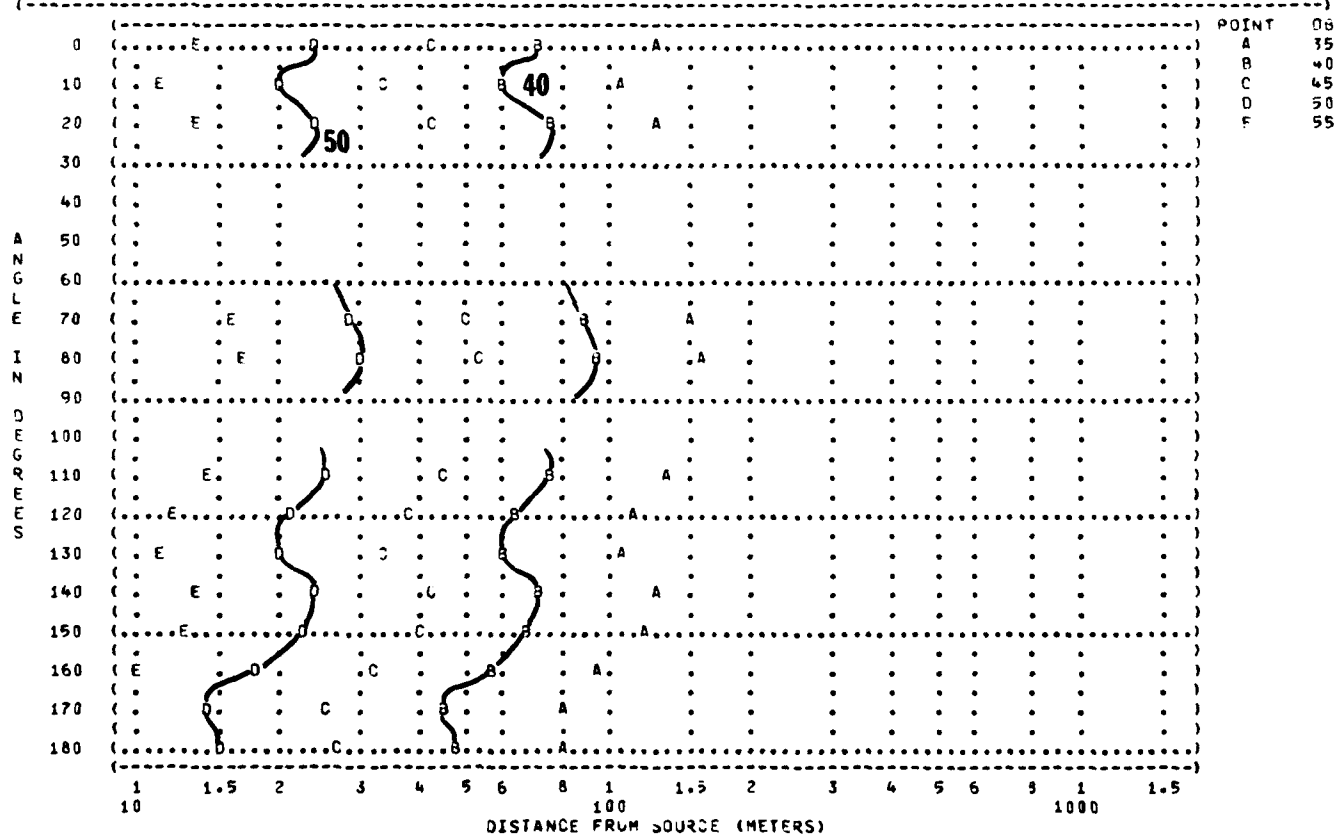
(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (500 HZ OCTAVE BAND			) IDENTIFICATION:)) OMEGA 1.4) TEST RA-000-003) RUN 01) 16 APR 92) PAGE 20
(NOISE SOURCE/SUBJECT: (GPC-20 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATIONS: (COMPRESSOR ON	) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M HG) REL HUMID = 70 %	



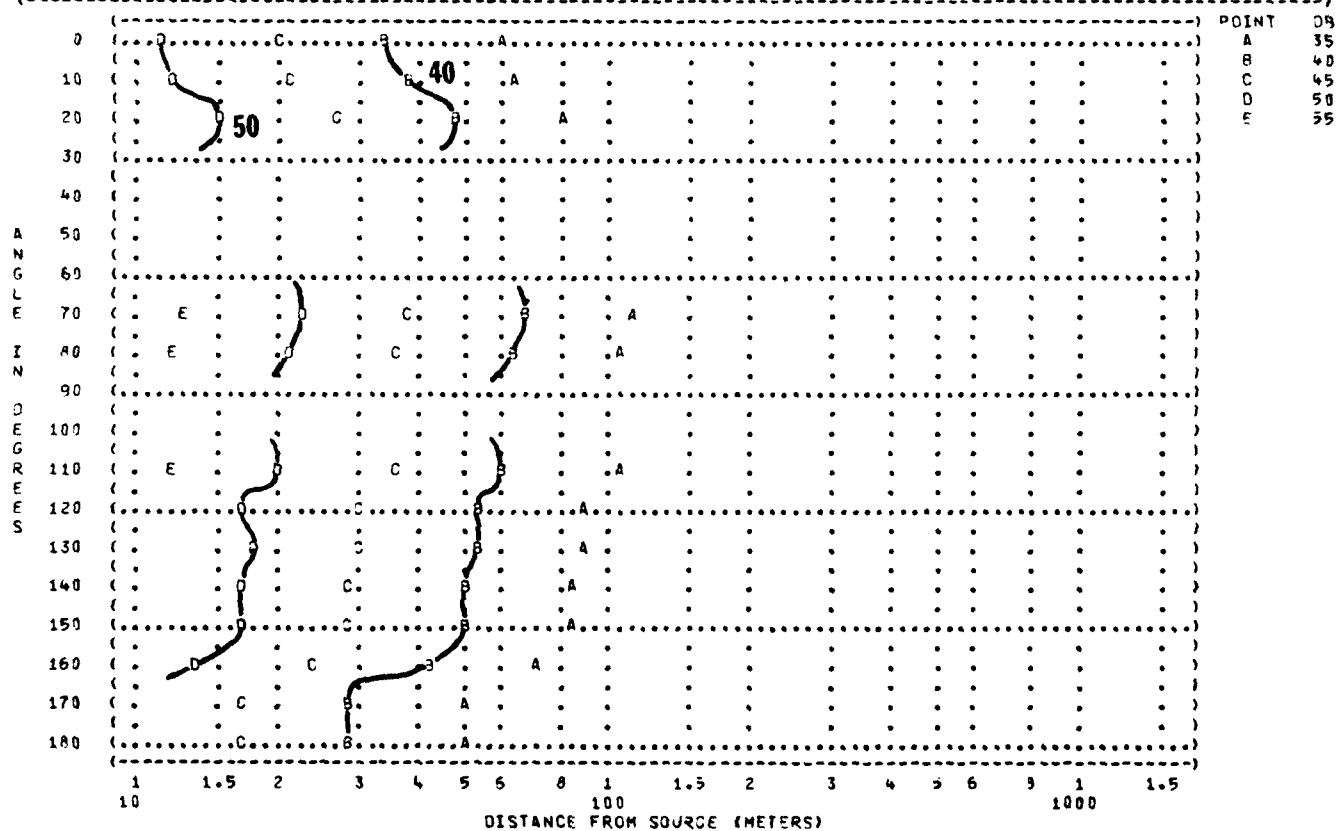
(FIGURE: SOUND PRESSURE LEVEL (SPL)			) IDENTIFICATION:)	
(9 EQUAL LEVEL CONTOURS (DB)			) OMEGA 1.4)	
(500 HZ OCTAVE BAND			) TEST 9A-000-003)	
(NOISE SOURCE/SUBJECT:		(OPERATION:	) METEOROLOGY:	
(GPC-26 COMPRESSOR		(COMPRESSOR ON	) TEMP = 15 C)	
(FAR FIELD NOISE LEVELS		(	) BAR PRESS = .760 M HG)	
(		(	) REL HUMID = 70 %)	
(		(	) PAGE 20)	



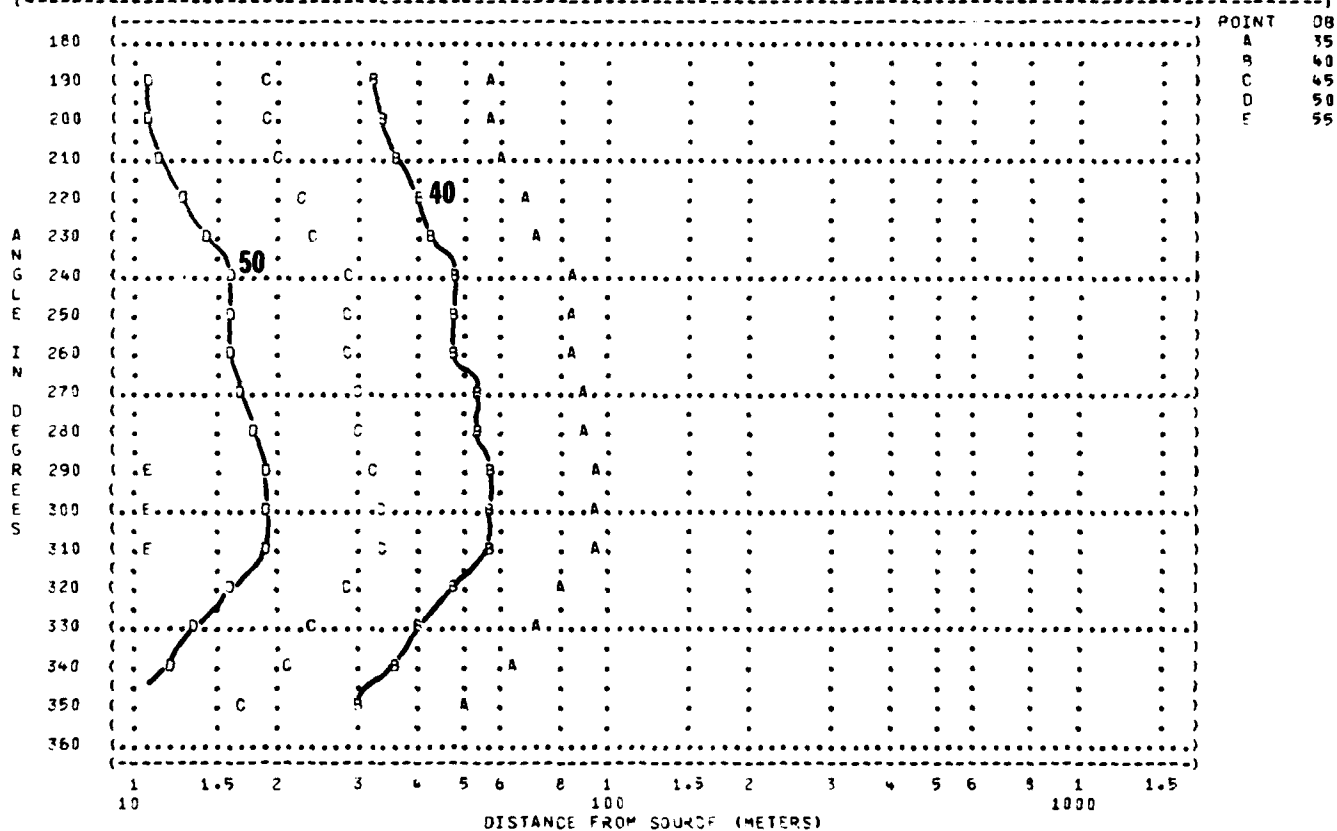
(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (dB)))
 (1000 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C)
 (FAK FIELD NOISE LEVELS () BAR PRESS = .763 M HG)
 () REL HUMID = 70 %)
 () PAGE 21)



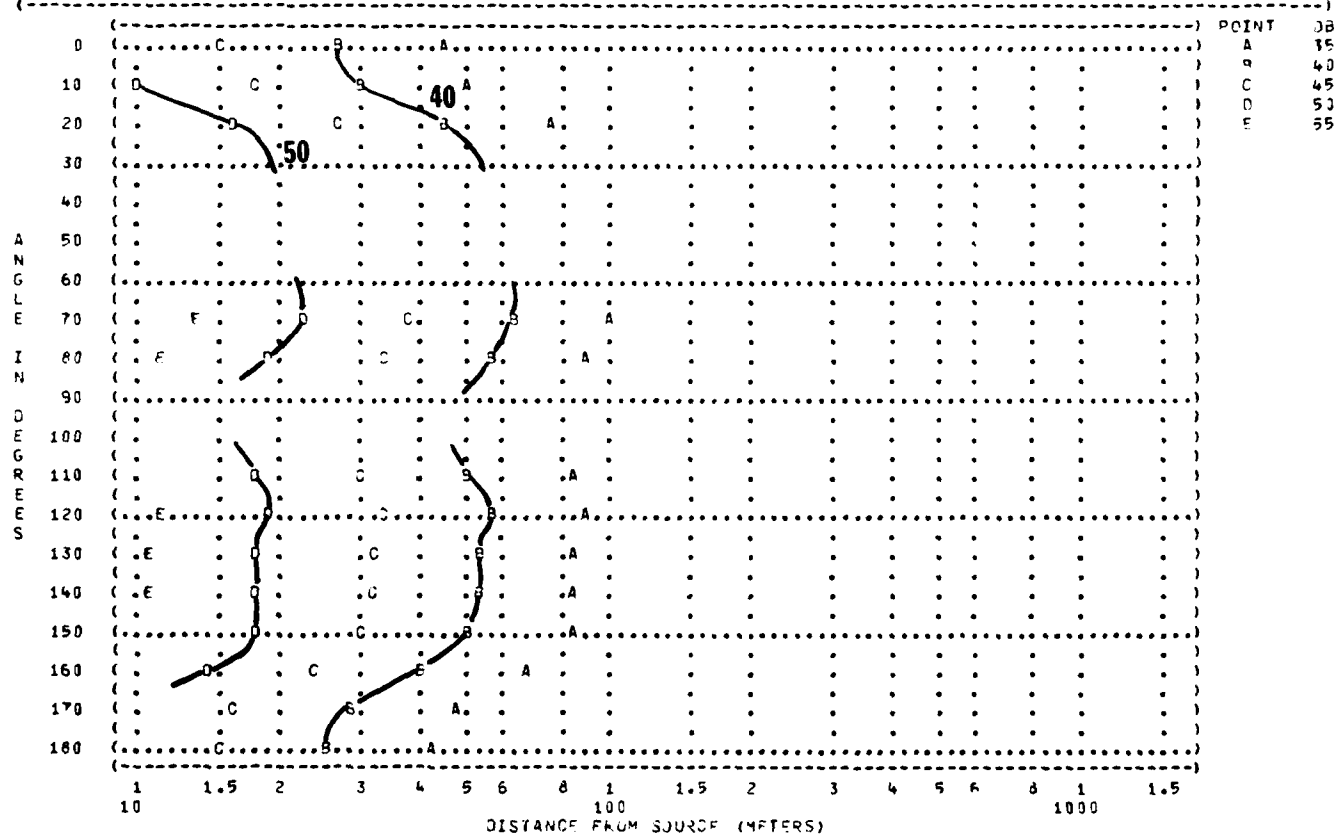
(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9 EQUAL LEVEL CONTOURS (dB)))
 (2000 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) TEST 3A-003-003)
 (GPC-28 COMPRESSOR (COMPRESSOR ON) TEMP = 15 C) RUN 01)
 (FAR FIELD NOISE LEVELS () BAR PRESS = .760 M HG) 06 APR 82)
 () REL HUMID = 70 %))
 () PAGE 22)



(FIGURE: SOUND PRESSURE LEVEL (SPL) (9 EQUAL LEVEL CONTOURS (DB) (2000 HZ OCTAVE BAND) IDENTIFICATION:))) OMEGA 1.4)) TEST BA-000-003)) RUN 02)) 06 APR 82))) PAGE 22)
(NOISE SOURCE/SUBJECT: (GPC-28 COMPRESSOR (FAR FIELD NOISE LEVELS	(OPERATIONS: (COMPRESSOR ON) METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M Hg) REL HUMID = 70 %	



(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION: ()
 (9 EQUAL LEVEL CONTOURS (dB)) ()
 (4000 HZ OCTAVE BAND) ()
 (NOISE SOURCE/SUBJECT:) (OPERATIONS:) METEOROLOGY: ()
 (GPC-26 COMPRESSOR) (COMPRESSOR ON) TEMP = 15 C)
 (FAR FIELD NOISE LEVELS) () BAR PRESS = .760 M HG)
 () () REL HUMID = 70 %)
 () () PAGE 23)



(FIGURE: SOUND PRESSURE LEVEL (SPL)			) IDENTIFICATION:)	
(9 EQUAL LEVEL CONTOURS (DB)))	
(4000 HZ OCTAVE BAND			) OMEGA 1.4)	
(NOISE SOURCE/SUBJECT: )			) TEST BA-000-003)	
(GPC-28 COMPRESSOR	(OPERATION: COMPRESSOR ON	) METEOROLOGY: TEMP = 15 C	) RUN 02)	
(FAR FIELD NOISE LEVELS	( )	) BAR PRESS = .760 M HG	) 06 APR 92)	
( )	( )	) REL HUMID = 70 %))	
( )	( )	) )	) PAGE 23)	

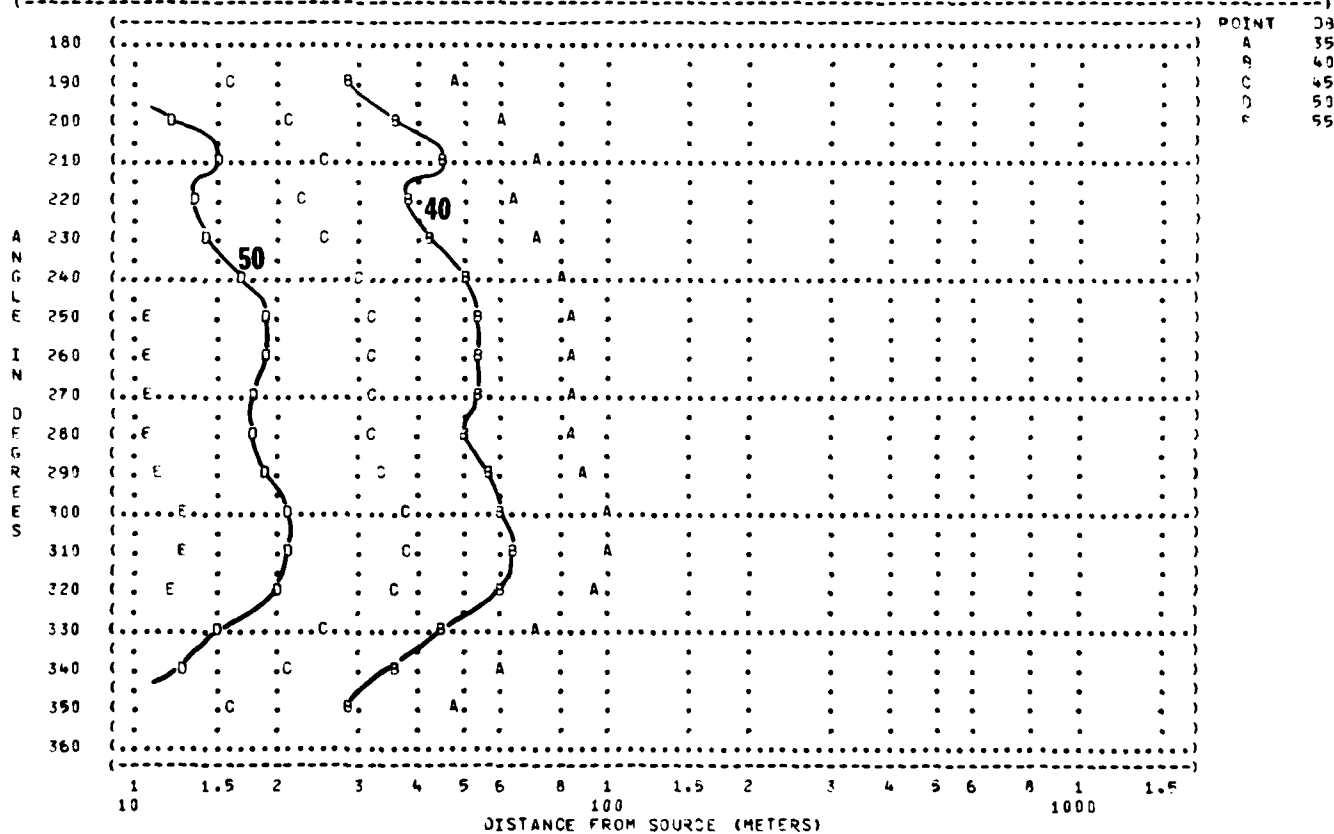
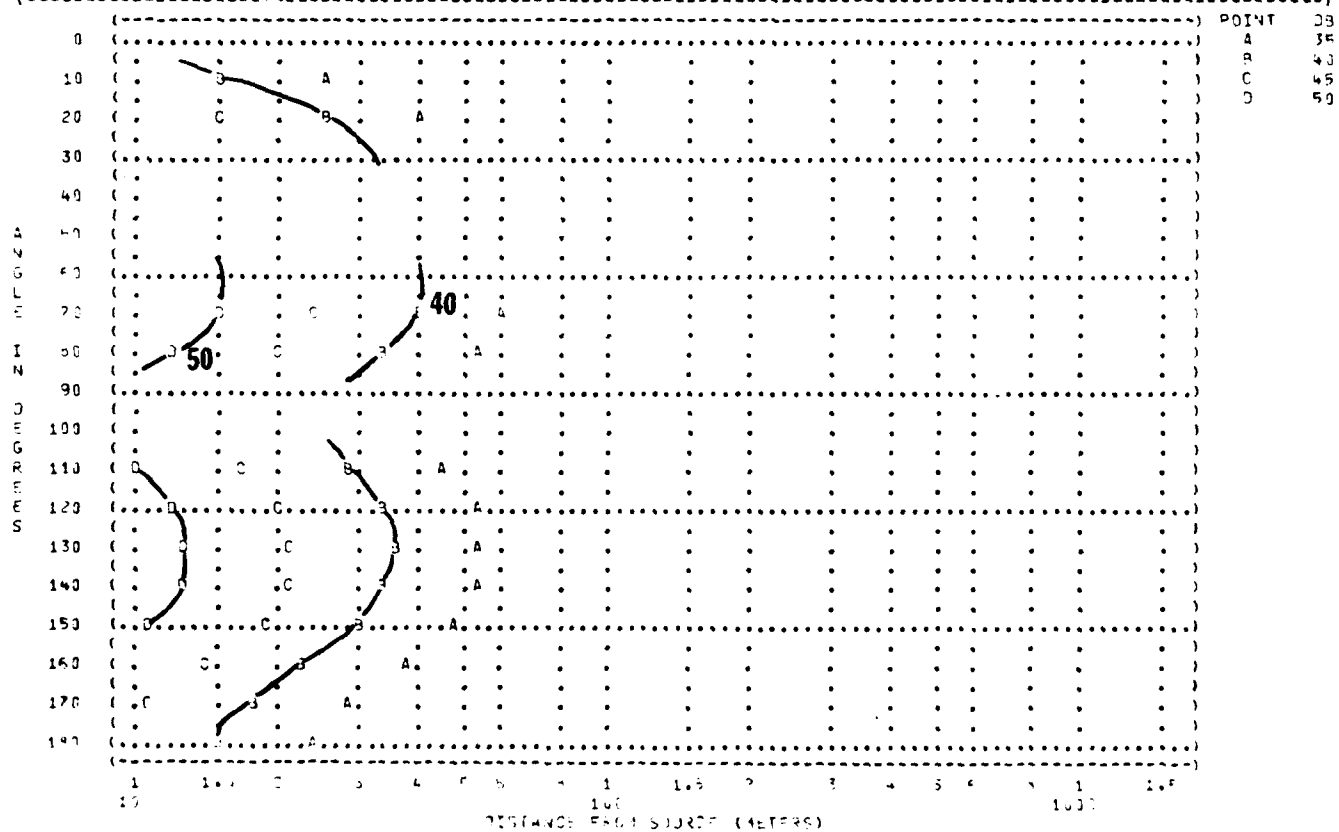
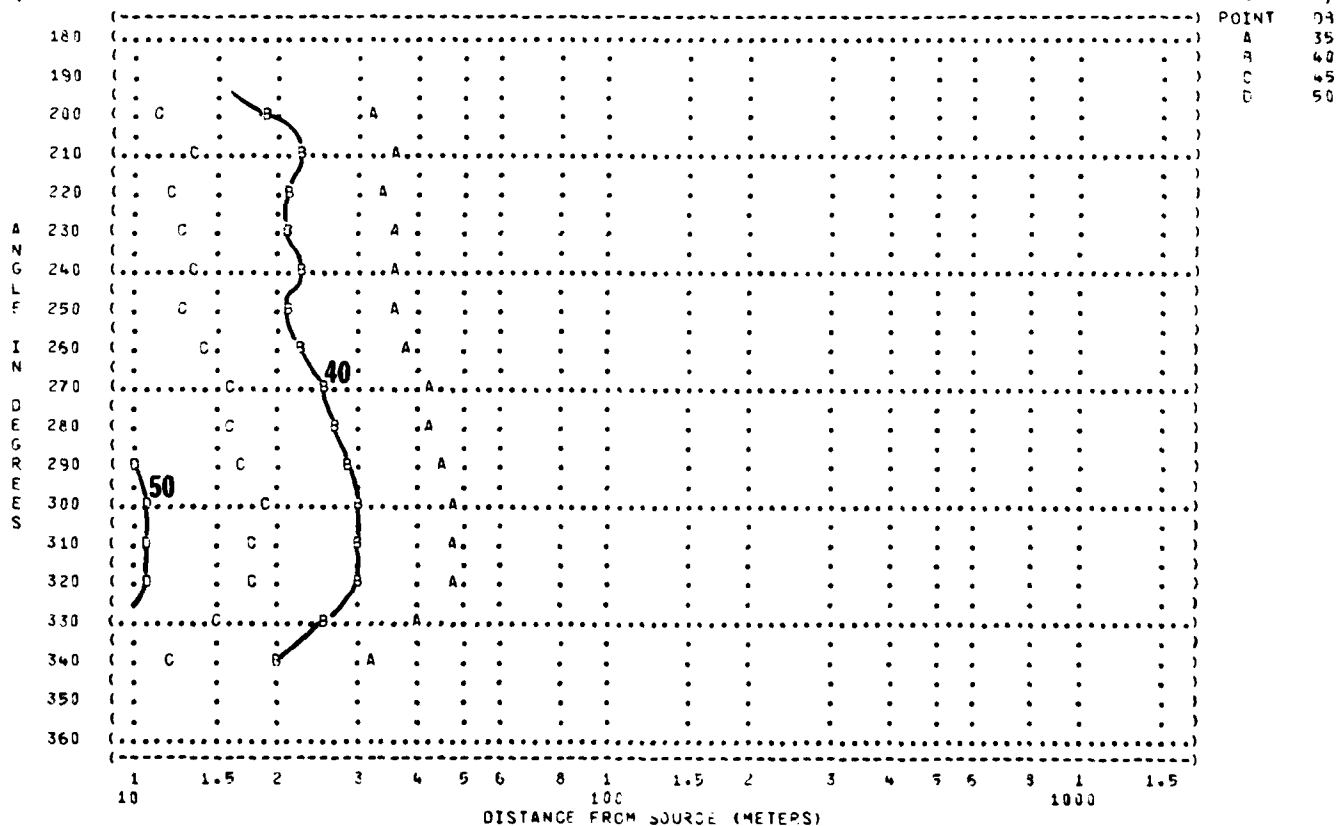


FIGURE 9 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (dB) 6330 HZ OCTAVE BAND			IDENTIFICATION:) OMEGA 1.4) TEST RA-010-003) RUN 01) 06 APR 82) PAGE 24
NOISE SOURCE/SUBJECT: GPC-26 COMPRESSOR FAR FIELD NOISE LEVELS	OPERATION: COMPRESSOR ON	METEOROLOGY:) TEMP = 15 C) BAR PRESS = .760 M HG) REL HUMID = 70 %	



(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 (9) EQUAL LEVEL CONTOURS (LB)))
 (0000 HZ OCTAVE BAND))
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:) TEST RA-000-003)
 (GPC-26 COMPRESSOR) COMPRESSOR ON) TEMP = 15 C) RUN 12)
 (FAR FIELD NOISE LEVELS)) BAR PRESS = .760 M HG) 06 APR 82)
 ()) REL HUMID = 70 %))
 ())) PAGE 24)



END

DATE
FILMED

7 82

DTIC